CESAJ-RD-SW-F
APPLICATION NO. SAJ-2000-1926 (IP-HWB) DEC 07 2005

MEMORANDUM FOR RECORD
SUBJECT: Department of the Army Environmental Assessment and Statement of Findings on Above-Numbered Permit Application.

1. APPLICANT: J.D. Nicewonder, Jr.
148-B Bristol East Road
Bristol, Virginia 24201

2. LOCATION, EXISTING SITE CONDITIONS, PROJECT DESCRIPTION, AND CHANGES TO PROJECT:

a. Location: The project site involves freshwater-forested wetlands within the Cocohatchee watershed and is located north of Immokalee Road and east of Interstate 75 in Sections 10, 11, 15, 16, 21 and 22, Township 48 South, Range 26 East, Collier County, Florida.

Latitude 26°17'37" N, Longitude 81°41'51" W

b. Existing Site Conditions: The project site is approximately 1,713.53 acres and consists of approximately 227.51 acres of uplands and 1,486.02 acres of wetlands. The majority of the project site was historically used for cattle pasture. The project is bounded on the north by a series of farms and agricultural fields and a recently permitted residential development known as Bonita Beach Road RPD. Bounded on the west by two proposed developments; Parklands and Terafina, and an existing development called Olde Cypress. The southern property boundary abuts the Cocohatchee or Immokalee Road Canal. The northeast property boundary is undeveloped while the southeast boundary is adjacent to numerous small farms and out-parcels. Immediately to the east of these out-parcels is a rock and gravel mine known as Mule Pen Quarry. The quarry is still active but slowly being converted into a residential development known as Heritage Bay.

Off-site sheet flow enters the property from the northeast and then flows west and south into the Cocohatchee Canal. Constricted and limited outfalls along the Cocohatchee Canal have sometimes created abnormally flooded conditions during the wet season. A majority of the site has melaleuca densities of greater than 50% coverage.

c. Project Description: The proposed project involves the construction of an upscale residential and golf course community to be known as "Mirasol." The project also includes the construction of a 4-feet deep and 200-feet wide regional flow-way proposed to alleviate upstream and sub-basin flooding and return the regional water levels to more historic norms.

The project site is 1713.53 acres that consists of 1486.02 acres of jurisdictional wetlands and 227.51 acres of uplands. The project can be separated into three parts including the actual development, regional flow-way, and preserve:

	Total (acres)	wetlands (acres)	uplands (acres)
Development	825.61	706.28	119.33
Flow-way	036.50	034.27	002.23
Preserve	851.52	745.47	105.95
Project Site	1713.53	1486.02	227.51

The Mirasol development is located within the southern two sections of the property within an 825.61-acre footprint consisting of 706.28 acres of wetlands and 119.33 acres of uplands. Development includes roads and residential areas (349.4 acres), lakes (116 acres), clubhouse maintenance and sales buildings (23.4 acres), and two 18-hole golf courses (210 acres). There are approximately 127 acres of native or natural areas including 48.05 acres of wetlands preserves. The proposed plan would impact 587.10 acres of jurisdictional waters by discharging 1,900,000-cubic yards of fill into 485.55 acres and excavating 1,750,000-cubic yards from 101.55 acres. Approximately 71.85 acres of wetlands scattered throughout the development would not be filled or excavated but because of location and surrounding development, would be isolated and are considered as secondarily impacted. The remaining 47.33 acres of wetlands within the actual development have been incorporated into the 48.05 acres of interior preserves.

As indicated above, the project includes the construction of a regional flow-way. The construction of the flow-way is required by the South Florida Water Management District (SFWMD) and is a component of the South Lee County Watershed Plan designed to alleviate flooding in the Bonita Springs area. The flow-way would be constructed from the northeast corner of the project to the Cocohatchee Canal, a distance of approximately three miles. The flow-way would typically be approximately 200 feet wide with a maximum depth of four feet and construction would continue off-site to the south through Terafina (undeveloped) and off-site to the south through the existing wetland preserve at Olde Cypress. The flow-way would end at a water control weir approximately 327 feet north of the Cocohatchee Canal and would drain into the canal via three, 72-inch culverts. A summary of flow-way impacts is below.

Flow-way Impacts for Mirasol, Terafina and Olde Cypress (acres)

	Total	wetlands	uplands
Mirasol	036.50	034.27	002.23
Terafina	023.41	023.35	000.06
Olde Cypress	029.20	029.10	000.10
Total:	089.11	086.72	002.39

The remaining portion of the project to the north is part of a contiguous wetland area called the flow-way preserve. This area is approximately 851.52 acres and consists of 745.47 acres of wetlands and 105.95 acres of uplands. One large 20-acre out-parcel owned by a third party is located within the flow-way preserve. Access to the out-parcel would be restricted to a 1.2-acre road right-of-way granted by the applicant.

As compensation for wetland impacts, the applicant is proposing on-site wetland mitigation within the Mirasol development (internal preserves), mitigation within the flow-way conveyance channel (22-foot-wide littoral shelves), and wetland mitigation within the flow-way preserve. The internal preserves would consist of the preservation and enhancement of four separate wetland systems totaling 48.05 acres. The 47.33 acres of wetlands and 0.72 acres of uplands would be enhanced by removing exotic and nuisance vegetation and placed under a conservation easement granted to the SFWMD. In addition to the four wetland preserves, approximately 71.85 acres of wetlands and 7.10 acres of uplands would remain in a natural condition and would not be filled or excavated. These 78.95 acres of "retained" lands would serve as support for and provide travel corridors to the internal preserves. The retained lands and internal preserves total 127 acres of natural lands within the development.

The applicant is also requesting compensatory mitigation credit for the regional flow-way channel. The Mirasol portion of the flow-way would be located on the north side of the development and separates the development from the flow-way preserve. Two 8-foot deep lakes would be constructed within the flow-way channel to provide deepwater habitat and 22-foot wide littoral shelves would be constructed along the shoreline on both sides of the flow-way. With the exception of the two lakes, the flow-way would be planted with appropriate native vegetation and function as an herbaceous wetland system.

From Mirasol the flow-way turns to the south and would be constructed through the proposed wetland preserve on Terafina. The Terafina portion of the flow-way would not have any deep-water areas and only one shoreline would have a littoral shelf. This shelf would not be continuous along one bank but would alternate along both shorelines. The shelf and flow-way would be planted with appropriate native wetland vegetation.

From Terafina, the flow-way would continue south through the forested wetland preserve at Olde Cypress. No deep-water lakes or littoral shelves would be built in this portion of the flow-way; however, the flow-way would be planted with appropriate native wetland vegetation.

After construction and planting, the applicant is proposing to monitor and maintain the flow-way free of exotic and nuisance vegetation until such time that the Big Cypress Basin Board (BCB) would assume responsibility for the flow-way. The applicant is proposing to provide sufficient funds to the BCB for perpetual maintenance.

The final portion of the on-site wetland mitigation includes the enhancement and maintenance of the 851.42-acre regional flow-way preserve located off-site to the north of the Mirasol development. This preserve consists of 745.47 acres of wetlands and 105.95 acres of uplands. All exotic and nuisance vegetation would be removed and replanted with appropriate native species where necessary. The entire preserve would be maintained and monitored for 10-years. The preserve would be placed under a conservation easement granted to the SFWMD and eventually transferred to the Corkscrew Regional Ecosystem Watershed Trust (CREW) with sufficient funding for perpetual maintenance.

Any remaining compensatory mitigation would be conducted off-site. Off-site mitigation includes the purchase of 10 credits from Panther Island Mitigation Bank that was required as part of the SFWMD permit, and the purchase of an unidentified amount of additional property contiguous to the flow-way preserve.

d. Changes to Project: After the publication of the public notice the applicant purchased a 160-acre parcel as additional mitigation. The parcel is located in Section 11, Township 48 South, Range 26 East, and is contiguous to the regional flow-way preserve. The applicant also removed a five-acre parcel in Section 10 from the project because the applicant could not establish clear title to the property. As a result of the addition and elimination of lands, the total acreage changed from 1555.31 acres to 1713.53 acres.

Another change involved habitat mapping. In 2000 a large fire burned across Sections 10 and 15 of the project site. The damage caused by the fire and the subsequent growth after the fire (both native and exotic) altered the vegetative communities. Since the original habitat mapping was done in 1999 and no longer represented current conditions, the habitats were re-evaluated in 2004. As a result of the remapping, some of the acreage numbers changed from the original submittal.

Other changes included reducing the size of the golf course and clubhouse while increasing the size of the residential area, storm water management lakes and wetland preserves; however, the basic layout of the development did not change.

The on-site compensatory mitigation proposal changed very little but the off-site proposal for additional mitigation was modified in order to purchase additional land contiguous to the regional flow-way preserve. Other changes included the donation of the wetland preserve areas to CREW and a slight change in the impacts from the flow-way. And, the final change involved the construction of the regional flow-way through Terafina. Mirasol would be totally responsible for the construction but would not be involved with the enhancement of any adjacent wetland areas. Any mitigation of surrounding wetlands would be the responsibility of the Terafina development.

3. PROJECT PURPOSE:

a. Basic: Construct a residential and golf course development.

b. Overall: Construct an economically viable upscale residential and golf course community in northern Collier County.

4. Scope of Analysis: The proposed project is considered to be a private action. Federal involvement is limited to regulating the discharge of dredged or fill material into waters of the United States. The applicant proposed to impact over 600 acres of jurisdictional wetlands and cannot complete the project without impacting waters of the United States. Therefore, the Corps of Engineers has determined the scope of analysis for this project is the entire project area and surrounding wetlands that could be secondarily impacted by the project.

5. STATUTORY AUTHORITY: In accordance with Section 404 of the Clean Water Act (33 U.S.C. 1344).

6. OTHER FEDERAL, STATE, AND LOCAL AUTHORIZATIONS OBTAINED OR REQUIRED AND PENDING:

a. State water quality certification (WQC): The South Florida Water Management District (SFWMD) issued an Environmental Resource Permit (#11-02031-P) on 14 February 2002. Issuance of an ERP constitutes certification of compliance with state water quality standards (WQC).

b. Coastal Zone Management (CZM) consistency/permit: There is no evidence or indication from the State of Florida that the project is inconsistent with the Florida CZM. Issuance of the SFWMD permit certifies that the project is consistent with the CZM plan.

c. Other authorizations: It is not known what other permits or authorizations have been issued or required.

7. DATE OF PUBLIC NOTICE AND SUMMARY OF COMMENTS:

a. Application History: The Corps received and initially reviewed the application on 19 May 2000. The Corps requested additional information on 2 June 2000 and considered the application complete on 17 May 2001. The Corps issued a public notice on 25 May 2001 and sent this notice to all interested parties including appropriate State and Federal agencies. Responses to the public notice were requested within a thirty-day (30) comment period ending 24 June 2001.

b. Bridge Crossing Permit Application: On 23 May 2001, the Corps of Engineers was in receipt of an Environmental Resource Permit (ERP) application. The proposed project was for the construction of a bridge crossing at the Immokalee Road and Mirasol intersection. The South Florida Water Management District application number is 010521-8. After further discussions with the applicant, it was determined that the project was separate and independent from the Mirasol project and that no fill would be discharged into waters of the United States.

c. Public notice comments: The Corps has reviewed all of the comments submitted in response to the circulation of the public notice. The Corps has summarized these comments below:

(1) US Environmental Protection Agency (EPA): By letter dated 19 June 2001, EPA expressed concern with three elements of the application (1) avoidance and minimization of wetland impacts, (2) compensatory mitigation to offset unavoidable wetland losses, and (3) the potential to cause or contribute to significant degradation of waters of the U.S. EPA finds that these wetlands within the Mirasol project area are Aquatic Resources of National Importance (ARNI) and that, in accordance with the procedural requirements of the 1992 404(q) Memorandum of Agreement (MOA) Part IV, 3(a) between the Corps of Engineers and EPA, the proposed work may result in substantial and unacceptable adverse impacts to ARNI. In accordance with Part IV, 3(b) of the MOA, by letter dated 16 July 2001 the Regional Administrator of the EPA determined that the project would have substantial and unacceptable impacts to an ARNI.

(2) U S Fish and Wildlife Service (FWS): By letter dated 22 June 2001, FWS stated that the project site contains habitat suitable for the Federally endangered Florida panther (*Puma concolor coryi*), endangered wood stork (*Mycteria americana*), endangered red-cockaded woodpecker (RCW)(*Picoides borealis*), threatened eastern indigo snake (*Drymarchon corais couperi*), and state-listed Big Cypress fox squirrels (*Sciurus niger avicennia*). The FWS stated that they had not received all of the information necessary to concur with a "not likely to adversely affect" determination or request initiation of formal consultation on the proposed action. FWS requested additional information on the panther,

RCW and wood stork. No additional information was requested for the indigo snake or fox squirrel.

The FWS recommends that the applicant avoid and minimize impacts to project wetlands. Suggestions to achieve required on-site wetland avoidance and minimization include reducing the number of golf holes from 36 to 18, eliminating all golf holes and utilizing one or more of the 140 existing courses in Lee and Collier counties, and clustering all proposed housing units on the 31.62 acres of uplands adjacent to Immokalee Road.

In the absence of information addressing FWS concerns stated above and in view of the potential for this project to adversely affect fish and wildlife species and their habitats, FWS recommended denial of the project as proposed. In accordance with the procedural requirements of the 1992 404(q) Memorandum of Agreement, Part IV, 3(a) between the Corps and FWS, FWS stated that the proposed work may affect aquatic resources of national importance.

By letter dated 17 July 2001, the Regional Administrator of the FWS determined that the project would have substantial and unacceptable impacts on aquatic resources of national importance. The comments were provided in accordance with Part IV, Section 3(b) of the current MOA between the Department of Interior and the Corps of Engineers.

(3) National Marine Fisheries Service (NMFS): By electronic mail dated 13 June 2001, the NMFS stated that due to the current manpower level, NMFS is unable to adequately investigate the activity, and therefore, can take no action on the permit application at this time. NMFS also stated that the position is neither supportive of, nor in opposition to, the subject activities.

(4) State and local agencies: No comments received.

(5) Individuals and Organizations:

(a). Mr. Steven Bell: Mr. Steven Bell provided comments on behalf of Floridians for Environmental Accountability and Reform (FEAR) by submitting an electronic message on 27 May 2001. Mr. Bell requested denial of the permit based on numerous objections. Many of the objections were based on Corps of Engineers regulations and the Corps of Engineers lack of consultation with natural resource agencies. Other objections included the applicant's failure to demonstrate avoidance and minimization, floodplain impacts, endangered species issues, global warming, and secondary and cumulative impacts. Mr. Bell requested a public hearing to evaluate the probable impact on the public interest.

By letter dated 29 May 2001, the Corps of Engineers acknowledged receipt of Mr. Steven Bell's request for a public hearing.

(b). Ms. Kelly Samek: By letter dated 22 June 2001, Ms. Kelly Samek submitted comments as a concerned citizen. Ms. Samek stated that the public notice makes no mention of practicable alternative analysis, minimization of impacts or functional value of the present wetlands. Ms. Samek also stated there was no analysis on endangered species, the gopher tortoise, the Coral Reef Aquifer, and other public interest elements.

(c). Ms. Alice Benitez: By letter dated 22 June 2001, Ms. Alice Benitez submitted comments as an adjacent property owner. Ms. Benitez believes that the proposed regional flow-way would funnel water through her property and expressed concerns regarding the maintenance and ownership of the flow-way.

(d). Mr. and Mrs. Roy Custer: By letter dated 25 June 2001, Mr. A. Edward McGinty submitted comments on behalf of Roy and Peggy Custer. Mr. and Mrs. Custer are adjacent property owners to the proposed project and by letter dated 23 July 2001, submitted amended comments and questions. Mr. and Mrs. Custer had concerns if only a portion of the regional flow-way were constructed and wanted to know how the flow-way would affect upstream, downstream and adjacent properties.

d. Additional Coordination: The comments received in response to the public notice were coordinated with the applicant by letter dated 29 August 2001. The Corps of Engineers also provided additional comments on the proposed project. The Corps of Engineers expressed concerns about the two out-parcels not currently owned by the applicant. In addition, the Broken Back Road ends approximately midway through the development along the eastern property boundary and appears to be an obvious future access to one of the out-parcels. The Corps of Engineers also requested project drawings that indicate the connection between the proposed regional flow-way and the Cocohatchee Canal. The Corps of Engineers also requested a detailed alternatives analysis, a separate and complete mitigation proposal for on-site wetland impacts, a separate and complete off-site compensatory mitigation proposal, a separate and complete compensatory mitigation proposal for impacts associated with the "Terafina" segment and the "Olde Cypress Golf Club" segment, and a separate analysis on how the proposed project would affect the Florida panther, the wood stork, the red-cockaded woodpecker, and the eastern indigo snake.

e. Applicant's Response to Comments: By letter dated 12 October 2001, the applicant submitted a full and written response to the comments:

- The applicant stated that Broken Back Road currently provides access to one of the out-parcels and this would not change as a result of the proposed project. The other out-parcel is a 20-acre parcel that is located totally within the proposed preserve area. Currently there is no existing access route to the parcel, however the owner has an easement, which was provided by the Collier County approved PUD zoning ordinance. The applicant is required to provide legal access to the parcel. Access to the parcel is not known and all permitting of the access and any mitigation would be the responsibility of the out-parcel owner.

- The applicant stated that the existing conditions in the basin currently funnel sheet flow from hundreds of acres of land in a southeasterly fashion to the Cocohatchee Canal and in the process across the property belonging to Ms. Alice Benitez and Roy and Peggy Custer. Big Cypress Basin built a concrete weir along the frontage of the Benitez parcel to slow down the velocity or volume of the water currently coursing through the natural outfall. The applicant made inquiries to purchase this property but the asking price was prohibitive. The applicant redesigned the outfall on the only available land. The proposed flow-way connects to the Cocohatchee Canal via pipe connection.

- The applicant provided a discussion of alternative sites and selection criteria.

- The applicant stated that the proposed three-phase project would consist of (1) constructing a regional flow-way through the site and two adjacent properties; (2) constructing a maximum of 799 single-family residential units, roads, an 18-hole golf course, thirty-five lakes, and open spaces; and (3) constructing an additional 18-hole golf course with club facilities, eight lakes and open spaces.

- The applicant stated that the proposed impacts have been reduced from 739 acres to 526 acres of direct impacts and 138 acres of secondary impacts. The applicant has increased the mitigation acreage from 788 acres to approximately 933 acres of enhancement, restoration, and preservation. The preserved areas include 37.60 acres within the development, 753.30 acres of wetland flow-way preserve, 101.50 acres of upland flow-way preserve and 40.20 acres of flow-way conveyance.

- The applicant stated that the entire regional flow-way would be monitored and it is the intention to turn the property over to CREW for long-term perpetual maintenance and conservation. A maintenance fund would be set up to insure the needed maintenance activities would be funded in perpetuity.

- The applicant stated that the mitigation proposal has changed due to additional efforts to avoid and minimize impacts from the proposed project and with the addition of 160 acres to the project site.

- The applicant stated that for the Olde Cypress Golf Club segment of the flow-way the applicant is purchasing 1.5 credits from the Panther Island Mitigation Bank as mitigation for the transformation from forested to herbaceous wetland.

- The applicant provided an ecological analysis to address the concerns raised by the Corps of Engineers, EPA and FWS.

f. Additional Coordination with Agencies:

(1). By letter dated 09 November 2001 to the FWS, the applicant's agent requested to resolve and alleviate concerns with the proposed project.

(2). On 14 December 2001, a meeting was conducted at the EPA's West Palm Beach office. The meeting was attended by the applicant's agent, attorney and engineer, EPA representatives and Corps of Engineers representatives.

(3). By letter dated 10 January 2002, the Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) provided comments to the SFWMD and provided a copy to the Corps of Engineers in compliance with the Fish and Wildlife Coordination Act. FWC stated that north of section 10, the property is designated as priority one Florida panther habitat, and that red-cockaded woodpeckers have been documented on the site and one cavity tree is known to occur that the applicant identifies as abandoned. FWC recommended that the proposed site plan be modified to include deeper water refugia areas within the flow-way design; move the residential areas to the southern impacted portions of the site; and place the golf course features within the development areas.

(4). On 13 February 2002, a meeting was conducted at the Fort Myers Regulatory Office. The meeting was attended by the applicant's agent and the Corps of Engineers. The agent provided a revised listed species analysis.

(5). By letter dated 11 March 2002, the Corps of Engineers provided the FWS with a listed species analysis dated February 2002. The analysis included a detailed report on each of the species and identified proposed measures to be taken by the applicant to minimize potential impacts. Based on the analysis the Corps of Engineers determined that the proposed project may affect, but is not likely to adversely affect, the eastern indigo snake,

wood stork, red-cockaded woodpecker and Florida panther. The Corps of Engineers requested a written concurrence from the FWS.

(6). By letter dated 11 April 2002 to EPA, with a copy to the Corps of Engineers, the applicant's engineer provided an analysis for the Mirasol Water Quality Requirements. The engineer completed an analysis of the "Harper Nitrogen Pre and Post Loading Review." The engineer stated that the construction of the golf courses involves significant amounts of fill, which is used to create an artificial topography having drainage characteristics demonstrably different from pre-development conditions. In addition, golf course areas are typically raised in excess of the 25-year/3-day storm elevation, which together with good infiltration characteristics contributes to low runoff potential. Based on the parameters given in this report, this would place golf course runoff coefficients in line with agricultural lands and open space.

(7). By electronic mail dated 26 April 2002, EPA provided recommendations to the pollutant loading calculations. EPA stated that the total project site be included in the pre- v. post-assessment. The 732-acre preserve in the northern portion of the project should be the same in the pre- v. post assessment unless this area is impacted. The importance of including this area in the assessment is in illustrating the difference between natural areas and those areas that are converted to other uses. EPA also stated that although open spaces that are protected within the residential development provide some water quality benefits they do not provide the same level of WQ functions as undeveloped areas.

(8). By electronic mail dated 29 April 2002, FWS stated that they could not concur with the Corps of Engineers determinations of "may affect, not likely to adversely affect" the eastern indigo snake, wood storks, red-cockaded woodpeckers, and Florida panthers. FWS also stated that a FWS hydrologist is reviewing the hydrologic data submitted by the applicant and has some concerns with the data.

(9). By electronic mail dated 13 May 2002, EPA provided comments to the applicant's 13 May submittal.

(10). By letter dated 21 May 2002 to the FWS, with a copy provided to the Corps of Engineers, the applicant's attorney stated that a meeting was held between FWS and the applicant's consultants on 06 February 2002. The applicant's attorney stated that at the meeting and a review of the biological data, the consultants were verbally advised by the FWS that the concerns had been adequately addresses for all listed species with the possible exception of the Florida panther. The applicant's attorney requested the finalization of Section 7 consultation with the Corps of Engineers.

(11). By letter dated 31 May 2002, the applicant's consultant wrote a letter to Congressman Porter Goss, with a copy provided to the Corps of Engineers. The applicant's agent provided a brief chronology of the permitting process for the proposed project. The agent expressed concern that the FWS does not seem to be responding to requests for assistance or coordination in a timely manner.

(12). By letter dated 31 May 2002, the applicant's engineer provided an overview of how the Mirasol project has been designed to meet or exceed compliance with the Permit Review Criteria (PRC) established in the US Army Corps of Engineers Environmental Impact Statement for Improving the Regulatory Process in Southwest Florida (SWEIS). The Mirasol project appears on the following Natural Resource Issue Maps (NRIM): Flow ways; High Proportion Wetland; Red Cockaded Woodpecker; Florida Panther; Public Acquisition; and Water Quality 303(d)/Water Quality EIS Basins. The engineer addressed each of the NRIM and associated PRC applicable to the project with the objective of avoiding secondary and cumulative impacts to the resources identified in the SWEIS.

(13). By letter dated 18 June 2002, the applicant's engineer resubmitted a BOD water quality analysis for the project to the EPA. A copy of the letter was provided to the Corps of Engineers. The engineer stated that the essential part of the analysis consists of applying loading rates with two different land use scenarios: (A) under existing conditions, with actual land use breakdown, and (B) under proposed conditions with the site divided into proposed constituent land uses. The engineer stated that they would be able to show the potential difference in site water quality loading rates and also suggest appropriate treatment in order to maintain similar conditions in the post development conditions. The engineer stated that the wet detention water management system utilized throughout the project would adequately treat the BOD loading rates expected from the site. Based on the analysis the BOD water quality standards downstream at the Cocohatchee Canal would not be negatively impacted by the project.

(14). By electronic mail dated 26 June 2002, EPA provided comments to the 18 June 2002 submittal. EPA stated that the purpose of the pollution loading calculation is not to identify the contribution (non-pollutant load) that the natural areas make to downstream waters in pre- and post-project conditions. Rather, the purpose is to calculate the difference between human-induced pollution loads in the pre- v. post-project conditions. EPA also stated for purposes of this pollutant loading calculation requested by EPA, only man-induced (pollutant) loading rates should be included in the submittal in both the pre- and post-project calculations.

(15). By letter dated 01 July 2002 addressed to the FWS, the applicant's agent provided new topographic information gathered for the additional cross sections and spot elevations used for the hydrologic and vegetative analysis; the input hydrographs for the Sheet 2d model; the effects of the 9/10ths foot draw down indicated in the modeling for the South Florida Water Management District Consumptive Use Permit on the project; recorded history of observed changes in regional water levels, a description of the methodology used to derive the SFWMD approved synthetic season rainfall; tables more specifically breaking down the changes in hydro-period by vegetative community types. A copy of the letter was provided to the Corps of Engineers.

(16). By letter dated 11 July 2002, FWS stated that the applicant, in a revised project description submitted October 12, 2001, now proposes direct impacts to 526 acres of wetlands and indirect impacts to 138 acres of wetlands. The on-site preserve has been increased from 788 acres to 933 acres. The on-site preserve consists of 37.60 acres of wetlands within the development and 753.30 acres of wetlands and 101.50 acres of uplands bordering the 40.20-acre flow-way. The flow-way would have a maximum depth of four feet, an average width of 200 feet, and be about three miles in length. Littoral shelves, averaging 22 feet in width, are proposed along each side of the flow-way and along the entire length. The off-site preserve has been reduced from 205 acres to 160 acres. On 11 March 2001, the Corps of Engineers provided a revised determination of "may affect, not likely to adversely affect" for the Florida panther, wood stork, red-cockaded woodpecker and eastern indigo snake.

Florida panther: FWS stated that the applicant, based on information current through 2000, identified three panthers that passed within five miles of the site. The applicant also noted the existence of an uncollared panther in Bird Rookery Swamp about three miles north of the project site. The applicant conducted a white-tailed deer census and determined that the number of deer on the project site ranged from one deer per 426 acres to one deer per 1,279 acres. The average over six days of surveys was one deer per 591 acres. The deer density is considerably lower than those recorded at Big Cypress National Preserve. The large size of the tract, the presence of native vegetation, the project site's proximity to CREW and other factors demonstrate the value of this site to dispersing sub-adult panthers. The presence of melaleuca on-site and on adjacent properties does not seem to have deterred panther use of the area. The FWS cannot concur with the Corps of Engineers determination.

Wood Stork: FWS stated that the project site is located about 8.5 miles southwest of National Audubon Society's Corkscrew Swamp Sanctuary. There are no wood stork nests on-site. Wood storks have been observed foraging in the Cocohatchee Canal at the south end of the property. Wood storks may forage in puddles on interior roads but they have not been observed. The wetlands on-site are forested and used to a lesser degree than herbaceous

wetlands for foraging. FWS is concerned that the proposed regional flow-way will have an adverse effect on wood storks nesting at Corkscrew Swamp. The hydrological data provided are insufficient to determine what effect the project may have on water levels in Corkscrew Swamp. FWS cannot concur with the Corps of Engineers determination at this time.

Red-cockaded Woodpecker: FWS stated that the proposed project would impact about 658 acres of 1,278 acres of pine flatwoods or about 51 percent of the pine flatwoods on-site. The applicant's consultant sampled forty-six 100-foot diameter plots and determined that the density of the pines on the plots varied from 33 to 139 trees per acre with an average of 50 trees per acre. The average diameter of the trees was 23 centimeters and average height was 42 feet. Trees estimated at 75 to 90 years of age were scattered widely throughout the tract and seemed to be located in areas that were more difficult to access. Eradication of melaleuca and use of prescribed fire will improve the foraging conditions, a beneficial effect, on the remaining 49 percent. There were no active, inactive, or abandoned cavity trees on-site. Foraging surveys for red-cockaded woodpeckers were negative. The applicant is considering reintroduction of red-cockaded woodpeckers to the pine flatwoods on-site as a conservation measure. FWS does not have enough information to determine the efficacy of reintroduction at this time but is willing to entertain the idea. FWS concurs with the Corps of Engineers determination of "may affect, not likely to adversely affect" for endangered red-cockaded woodpeckers.

Eastern indigo snake: FWS stated that no gopher tortoise burrows were found on-site. The property contains 211 acres of pine uplands suitable for eastern indigo snakes of which 101 acres, 49 percent, will be preserved. The applicant has agreed to use the *Standard Protection Measures for the Eastern Indigo Snake*. FWS concurs with the Corps of Engineers determination of "may affect, not likely to adversely affect" for threatened eastern indigo snakes.

FWS also stated that they were working with the applicant to complete the consultation initiation package for endangered Florida panthers and endangered wood storks as required in the regulations governing interagency consultations. FWS stated that they would notify the Corps of Engineers when a complete consultation initiation package is received. FWS also stated that this concludes informal consultation on endangered red-cockaded woodpeckers and threatened eastern indigo snakes.

FWS also has identified the following concerns regarding the proposed action. Supporting documents provided by the applicant indicate that peak water levels and their duration in wetlands in the Corkscrew Swamp could be increased during 1-in-25 year and 1-in-100 year 3-day extreme rainfall events relative to existing conditions. In addition to these concerns, FWS stated that the applicant's modeling indicates that water levels in the on-site wetland preserves

adjacent to the proposed regional flow-way would be managed at levels below that necessary to maintain the ecological value of the wetlands. Overall it appears that the proposed flow-way would delay the onset of rainy season water levels and accelerate receding water levels with the progression of the dry season. FWS stated that this might have a deleterious effect on the forage fish prey base for wading birds. Truncated peak water levels and reduction in hydro-period will not allow forage fish the time they need to breed and disperse across the wetlands.

(17). By letter dated 18 July 2002 to the FWS and a copy provided to the Corps of Engineers, the applicant's agent provided FWS with the information requested at the 25 June 2002 meeting. The applicant provided topographic information gathered during the permitting process; HEC-RAS station maps; elevation information used for the vegetative analysis; aquifer drawdown information calculated for SFWMD permitting; summary of the methodology used in the derivation of the synthetic wet season rainfall; and a table of water elevations and durations used for the vegetative analysis.

(18). By electronic mail dated 23 July 2002, FWS informed the agent that FWS will concur with "may affect, not likely to adversely affect" for the eastern indigo snake and red-cockaded woodpecker. FWS cannot concur with a "may affect, not likely to adversely affect on the Florida panther. FWS stated that the project is large, comprised of suitable panther habitat; the area has been used by panthers, and is in close proximity to an area occupied by panthers. The panthers in CREW are uncollared and the likelihood that they have, are, or would use the property is high. The project may affect the panther and the effects are likely to be adverse. FWS also stated that enough information has been provided to initiate consultation on the Florida panther, however the same cannot be said for the wood stork.

(19). By letter dated 01 August 2002 to FWS, with a copy provided to the Corps of Engineers, the applicant's agent stated that the concern over the wood stork is related to the project's potential impacts upstream in the primary nesting area of Corkscrew. The possible impacts are related to hydrological questions, which are being addressed by the engineers that designed the system. The agent stated that the current design was to meet South Florida Water Management District objectives.

(20). By electronic mail dated 08 August 2002, the Corps of Engineers scheduled a meeting between the applicant, FWS, EPA and SFWMD to discuss the proposed project. The Corps of Engineers requested that FWS and EPA provide specific concerns prior to the meeting and asked if either agency was waiting on requested information.

(21). By letter dated 09 August 2002 to EPA, with a copy provided to the Corps of Engineers, the applicant's engineer provided a revised water quality analysis and stated that the calculations reflect the "worst case" assessment of the water quality impacts. The engineer also stated that the latest calculation has been modified to remove loading from the water management lakes. The engineer also argued that natural site loading rates should not be ignored in the calculations and that the receiving water body for the Mirasol project was not impaired. The engineer stated that the current stormwater design exceeds the performance standards set forth by Florida regulations and that the engineer was confident the project would not cause or contribute to a violation of State water quality standards and would certainly not significantly impair water quality.

(22). By letter dated 09 August 2002, the EPA and FWS submitted a joint letter expressing concerns with the proposed project. FWS is concerned that the project may adversely affect endangered Florida panthers (*Puma concolor coryi*) and endangered wood storks (*Mycteria americana*). EPA is concerned that the significant loss of wetland functions associated with this project, coupled with more rapid surface water drainage due to the proposed "regional "flood relief flow-way" will cause or contribute to significant degradation of waters of the United States. EPA and FWS have been working on this project with the Corps of Engineers for over a year. The agencies believe that the implications of permitting this project require them to further clarify their concerns to the Corps of Engineers. These concerns can be categorized as: (1) direct and cumulative impacts of this project in conjunction with other large projects in the same watershed, (2) direct and secondary impacts to fish and wildlife species, including endangered species, and (3) appropriateness of project purpose in the context of other federal and state restoration efforts in this region. EPA is particularly concerned with inclusion of the "regional flood-relief flow-way" as compensatory mitigation for on-site wetland impacts. EPA stated that the applicant's position seems to be that since the remaining wetlands are incapable of storing the increased runoff that future development will bring to this region, most of the remaining wetlands should be dredged and filled and replaced by deep man-made lakes and large linear storm water canals ("flow-ways"). Both the EPA and FWS are concerned that the "regional flood relief flow-way" will not provide for the enhancement and preservation of on-site wetlands. The applicant has stated that there is groundwater data, rainfall data, and other hydrological data to support their conclusion that the storm water "flow-way" would not impact downstream waters or on-site and adjacent wetlands. EPA and FWS have requested that the applicant supply hydrological data that supports this conclusion. EPA and FWS believe that information submitted heretofore indicates that unacceptable levels of drainage of on-site and upstream wetlands will occur if this project is constructed as proposed. Moreover, they believe that the resultant lowering of water levels in on-site and adjacent wetlands, in combination with changes in the timing, volume and

duration of surface water flows, will result in adverse impacts to waters of the U.S., as prohibited by Section 230.10(c) of the Section 404(b)(1) Guidelines. These impacts include reductions in the numbers and diversity of aquatic macro-invertebrates in on-site and adjacent wetlands, resulting in fewer prey species for foraging wading birds, such as the endangered wood stork.

The agencies are particularly concerned with the cumulative impacts this project will have on aquatic resources due to its connection with adjacent developments whose mitigation proposals utilize the same storm water "regional flow-way" system. Cumulative wetland impacts from all of the adjacent projects proposing to discharge to the flow-way would cover approximately 1,500 acres. EPA and FWS do not believe the on-site mitigation in conjunction with the creation of a three-mile long, four-foot deep, 200-foot wide storm water flow-way would offset this significant loss of wetland functions associated with the expanse of 1,500 acres. The adverse effects to habitat from altering dry and wet season hydro-periods through unnatural water table drawdowns and surface water drainage will require species to travel longer distances to forage, disrupt nesting and nurturing habits, and will result in increased stress and mortality.

The drainage and direct wetland impacts proposed by this project, in combination with the constriction of the remaining natural Cocohatchee flow-way, raises concern that the proposed project as designed is not consistent with federal and state programs ongoing in this region. The agencies also stated that it is clear that increasing water withdrawal demands in conjunction with increased surface water drainage will significantly impact aquatic resources within a region where the loss of surface and groundwater resources has been directly correlated with declines in fish and wildlife species.

The agencies believe that this project, as proposed, does not provide for the protection of aquatic resources and has the potential to cause or contribute to the significant degradation of waters of the U.S. The agencies believe that information supplied by the applicant heretofore does not support their contention that this project will not adversely impact on-site, adjacent, and off-site aquatic resources.

(23). By facsimile dated 12 August 2002, FWS provided additional comments with regard to outstanding hydrological issues. FWS stated that a review of the hydrologic analysis and follow-up meetings, disclosed that a number of outstanding technical issues remain unresolved. FWS stated that questions that were raised on 13 June 2002 have not been answered. Furthermore, the information and the digital format in which it was delivered has only increased the FWS' concerns about the models applied, the assumptions upon which the model are founded, input boundary conditions, and the implications of using synthetic wet season rainfall data. FWS stated that the information presented so far indicates that unacceptable levels of drainage of the

on-site and upstream wetlands will occur if the project is implemented as proposed. FWS stated that decreased water levels in wetlands combined with shorter hydro-periods will result in reductions in the numbers and diversity of aquatic macro-invertebrates in on-site and adjacent wetlands, resulting in fewer prey species for foraging wading birds, such as the endangered wood stork.

FWS also stated that another major concern is the assumption that the surface water and ground water system of the area are not hydrologically connected and therefore can be treated separately. FWS believes that the dry season ground water seepage around the weirs must be assessed using a coupled surface water and ground water model. Only then can it be determined if the hydrologic changes associated with the proposed project would be localized or regional in nature. FWS also stated that a key question that remains unanswered is how the Mirasol SHEET2D model incorporated the 1998 synthetic wet season rainfall data into the South Lee County SHEET2D model. The FWS is also concerned that errors in the model assumptions were compounded in the Wetland Rapid Assessment Procedure (WRAP) analysis.

FWS stated that the hydrologic analysis provided is not sufficient to assess regional watershed implications and potential impacts to fish and wildlife resources. These analyses are an important part of the FWS' review of the permit application. FWS stated that the review thus far and discussions with the consultants have resulted in concerns about the validity of statements, findings and conclusions contained in the October 2001 submittal. Accurate modeling and detailed analysis documenting potential hydrologic changes in the basin and the effects of the project on fish and wildlife resources are necessary if reviewers are to make informed decisions based on sound engineering principles.

(24). By electronic mail dated 16 August 2002, EPA provided the Corps of Engineers the requested questions and concerns for the scheduled 27 August 2002 meeting with the applicant.

(25). By letter dated 28 August 2002, FWS provided a response to an inquiry by Congressman Porter Goss's office. A courtesy copy was forwarded to the Corps of Engineers.

(26). By facsimile dated 30 August 2002, the Corps of Engineers provided a copy of the joint FWS/EPA letter dated 09 August 2002 to FWS.

(27). By electronic mail dated 30 August 2002, FWS provided the Corps of Engineers information that had been previously requested, however had not been received. FWS requested that the data submitted at the 25 June 2002 meeting at Vero Beach be portrayed as charts, graphs, etc., a copy of the power point presentation on CD, and requested handwritten notes from the 25 June 2002 meeting.

(28). By letter dated 10 September 2002, the applicant's attorney provided meeting notes for the 27 August 2002 meeting held between the applicant and FWS.

(29). By electronic mail dated 12 September 2002, the Corps of Engineers informed FWS that the scheduled meeting was still planned and that no additional information would be forthcoming prior to the meeting.

(30). By letter dated 18 September 2002, the applicant's attorney provided revised meeting notes for the 27 August 2002 meeting held between the applicant and FWS.

(31). By letter dated 19 September 2002, the applicant's attorney provided a response to the FWS email dated 30 August 2002. The applicant's attorney stated that Mirasol has not prepared any interpretations in chart, graph or other form of the raw data provided to FWS as part of its modeling efforts for the project. The attorney provided FWS a copy of the PowerPoint presentation on CD and meeting summary and handwritten notes.

(32). On 24 September 2002, a meeting was conducted at the Fort Myers Regulatory Office. The meeting was attended by the applicant's engineer, attorney and agent, and representatives from SFWMD, EPA, FWS and Corps of Engineers.

(33). By letter dated 04 October 2002, the applicant's attorney provided a response to the 09 August 2002 joint letter from EPA and FWS. The attorney stated that there seems to be a fundamental misunderstanding on the part of EPA and FWS of the purpose that would be served by the construction of the regional flow-way associated with the project and its effect on surrounding hydrology. The attorney stated that the flow-way was a component that the South Florida Water Management District required in order to permit the project. The South Lee County study completed after the flooding of Bonita Springs in 1995 was the basis for this project and determined that historic water flow patterns, water depths, and hydro-periods within the project basin had been altered by agricultural and residential development, and by the construction of Immokalee Road and the Cocohatchee Canal. The attorney also stated that to facilitate these early developmental activities, a system of berms was constructed that funneled surface water sheet flow from a basin 300 square miles in area into a restricted flow-way with a few outfalls to the Cocohatchee Canal. These works directed water to and held in the project site. The attorney concluded that currently the Mirasol site and surrounding sites are severely impacted by this significant off-site upstream inflow, and that the regional flow-way is designed to reestablish historic hydrological levels and to reduce the unnatural high water levels on the site. The regional flow-way would be expected

to convey these abnormal "peaks" downstream. However, he continued, the regional flow-way would not drain water from the project site once the peaks recede to historical wet season levels; and flow-way weirs would be set at existing adjacent ground levels to maintain natural hydro-periods during the dry season. The regional flow-way would convey artificially high peak floodwaters while maintaining historic hydrology year round. The cumulative result of these disturbances is altered hydro-periods resulting in extensive melaleuca infestation and artificially inundated natural upland communities. The regional flow-way and its associated preserve will restore natural hydro-periods to surrounding area, will restore, enhance, and preserve over 800 acres of valuable wetland and upland habitat and will alleviate regional floodwater conveyance problems. The attorney stated that the project will have a positive impact on floodwater conveyance, fish and wildlife species, including endangered and threatened species and would provide restoration, enhancement, and preservation of potential panther, wood stork, and red-cockaded woodpecker habitat.

Impacts to wetlands from construction of the proposed regional flow-way total 40.20 acres within the Mirasol boundaries, 23.70 acres within the Terafina boundaries, and 29.10 acres across the Olde Cypress property. Although not part of the regional flow-way project, the Bonita Beach Road development proposes to add approximately 175 acres immediately north and east of Mirasol which will tie into and effectively become part of the regional flow-way preserve. The attorney also provided information for the public interest test.

(34). By letter dated 30 October 2002, the National Wildlife Federation (NWF) and the Florida Panther Society (FPS) requested that the Corps include their letter dated 30 October 2002 and two attachments, into the administrative records of all Corps pending permit applications in panther habitat in Lee and Collier Counties, Florida.

The first attachment was a publication entitled "Panthers and Forests in South Florida; an Ecological Perspective" by E. Jane Comiskey et al (Comiskey Study). According to NWF and FPS, the Comiskey Study was a recent, peer-reviewed, scientific confirmation that panther habitat includes land other than that dominated by forest cover. The second attachment was a letter from NWF and the Florida Wildlife Federation (FWF) dated 7 June 2002 objecting to the issuance of a permit for the Florida Rock Industries Fort Myers Mine #2 located in Lee County. According to the NWF and FWF, the Biological Opinion for Florida Rock was not based on the best available science and does not support a finding of no jeopardy to the Florida Panther. The letter from NWF and FWF dated 7 June requested that the Corps reopen the public comment period and hold public hearings, reinitiate ESA consultation with the FWS and perform a comprehensive Environmental Impact Statement (EIS) analyzing the cumulative effects and alternatives of the Mirasol project.

In their letter dated 30 October 2002, NWF and NPS also requested that the Corps prepare an EIS before approving any additional projects in panther habitat, reopen public comments, and reinitiate consultation with the FWS.

(35). By letter dated 14 November 2002, the SFWMD stated that the proposed regional flow-way is an integral part of the Mirasol project and is consistent with the South Lee County Study. SFWMD stated that the District stands behind the technical conclusions and recommendations of the South Lee County Study. Further, in the process of permitting the Mirasol project, staff thoroughly reviewed and approved the applicant's hydrologic modeling analyses. In short, it is the District's opinion that the applicant's modeling provides reasonable assurance.

(36). By letter dated 13 December 2002, the Corps of Engineers stated that based upon the submittal of the information and all other requested information FWS has sufficient information to concur with the determination of may affect, not likely to adversely affect the wood stork. The Corps of Engineers also stated that the FWS had previously indicated that sufficient information has been received to initiate consultation on the Florida panther. The Corps of Engineers requested a concurrence letter for the wood stork and a confirmation letter from FWS that formal consultation has commenced for the panther. The Corps of Engineers requested a suspense date for the biological opinion.

(37). By letter dated 07 January 2003, the applicant's engineer provided description of corrections for storm events as previously presented in the South Lee Study.

(38). By letter dated 07 January 2003, the applicant's engineer provided an extended Water Quality BOD analysis. The modified version of the annual simulation model was demonstrated at the EPA office on 17 December 2002.

(39). By electronic mail dated 16 January 2003, the Corps of Engineers Office of Counsel received a Freedom of Information Act (FOIA) request from Banks Engineering.

(40). By letter dated 22 January 2003, FWS stated that the Corps of Engineers provided determinations of "may affect" for the endangered Florida panther, the endangered wood stork, the endangered red-cockaded woodpecker, and the eastern indigo snake in the 25 May 2001 Public Notice. The FWS advised the Corps of Engineers that FWS could not concur with the determination by letter dated 22 June 2001. The Corps of Engineers provided a revised determination of "may affect, not likely to adversely affect" for the four listed species on 11 March 2002. The FWS, on 11 July 2002 concurred with the

Corps of Engineers' revised determination for the red-cockaded woodpecker and the eastern indigo snake.

FWS could not concur with the revised determination for the Florida panther and the wood stork. The FWS indicated on 12 August 2002 that the consultation initiation package for the Florida panther was complete and that the consultation package for the wood stork was not complete. FWS provided additional comments on both species.

Florida panther:
The FWS re-stated its concerns of 11 July 2002 that the project site is important to dispersing sub-adult panthers and breeding adults. FWS summarized the activities of five radio-collared puma, three male panthers, one female panther, and one female cougar, and the continued presence of uncollared panthers in the Corkscrew Swamp where an uncollared female has been documented with kittens.

FWS also stated that the applicant proposed to impact 625 acres of panther habitat and to preserve and enhance 1,088 acres of panther habitat. The cumulative effects of development around Corkscrew Swamp will reduce and may preclude panther activity there. The Corps of Engineers by letter dated 11 March 2002 provided a determination of "may affect, not likely to adversely affect" for the endangered Florida panther. The FWS by letter dated 11 July 2002 affirmed that FWS could not concur with the Corps of Engineers determination. The FWS requested a revised determination for the panther.

Wood Stork:
FWS stated that the applicant proposes direct impacts to 526 acres of wetlands and indirect impacts to 138 acres of wetlands. The applicant also proposes to preserve and enhance 37.6 acres of wetlands within the project footprint and to preserve and enhance 908.30 acres of wetlands at the north end of the site adjacent to CREW. FWS also stated that the hydrologic analysis for the project site seems to indicate that post-development water levels in on-site wetland preserves may be insufficient to maintain a prey base for the wood stork thus reducing the value of the preserves as foraging habitat.

FWS also stated that even though new information indicates that water levels at the colony site will not be affected, several questions remain unanswered including a comparison of historic and present hydrologic conditions justifying a need for the regional flow-way. The hydrologic analysis evaluated conditions during an eight-month period, from April through November, but leaves unanswered the effects of the flow-way on dry season water levels. Dry season conditions forecast wet season water levels and influence the aquatic food chain by desiccating deep-water refugia.

FWS also stated that the Corps of Engineers provided a determination of "may affect, not likely to adversely affect" for the endangered wood stork on 11 March 2002 and again on 13 December 2002. FWS cannot concur with this determination. FWS believes that indirect impacts to wetlands are likely greater than 138 acres. Decreased water levels and a shorter hydro-period will reduce the availability of prey and the feeding and breeding ability of the wood stork. FWS requested a revised determination for the wood stork.

FWS also informed the Corps of Engineers that the Service was initiating formal consultation under Section 7 of the Endangered Species Act (ESA) of 1973. The consultation would assess the possible effects of the proposed 1,713.50-acre Mirasol golf course community on the endangered Florida panther and would, as a courtesy to the Corps of Engineers, also assess potential effects to the endangered wood stork.

FWS also stated that they had received all of the information necessary to initiate formal consultation on the proposed action. Therefore, it expected to provide the Corps of Engineers a biological opinion on or before 21 February 2003.

(41). By letter dated 23 January 2003, the applicant's agent provided comments to the NWF letter in regard to the Florida panther.

(42). By letter dated 07 February 2003, the applicant provided a response to EPA comments and updated water quality calculations.

(43). On 14 February 2003, the FWS submitted a draft Biological Opinion (BO) on the endangered wood stork (*Mycteria americana*) and the endangered Florida panther (*Puma concolor coryi*) to the applicant.

(44). By letter dated 19 February 2003, the applicant provided a copy of the draft BO to the Corps. The applicant also provided comments regarding the BO and indicated that the comments had been forwarded to the FWS.

g. Biological Opinion: On 21 February 2003, the FWS issued a biological opinion (BO) for the proposed project and the effects on the endangered wood stork (*Mycteria americana*) and the endangered Florida panther (*Puma concolor coryi*).

(1) Panther: It was the Service's conclusion that the development of Mirasol was not likely to jeopardize the continued existence of the panther and the wood stork. The FWS indicated that since no critical habitat had been designated for the panther, no statement of impact to critical habitat could be made. Nonetheless, the Service anticipated incidental take of panthers

associated with the conversion of 818.50 acres of poor quality panther habitat to a residential golf course community. The incidental take is expected to be in the form of harm and harassment. The amount of panther habitat affected by the proposed action is 0.03 percent of an estimated 2.2 million acres of habitat occupied by the panther. No direct mortality of Florida panthers is expected from the proposed action. Incidental take due to vehicular trauma is also not anticipated for the proposed action.

At the direction of the Service, the Corps of Engineers and the applicant have minimized incidental take to the extent reasonable, therefore the Service is not aware of any reasonable and prudent measures. The Service suggested conservation recommendations that included the creation of informational pamphlets and donations to fund the cost of tracking collars for Florida panthers.

(2) Wood Stork: It was the Service's conclusion that the development of Mirasol was not likely to jeopardize the continued existence of the wood stork. The FWS indicated that since no critical habitat had been designated for the wood stork, no statement of impact to critical habitat could be made. The Service anticipates incidental take of wood storks would be difficult to detect because wood storks forage over a wide area. Although 85% of wood storks forage within 12.5 miles of the nesting colony, the core foraging area (CFA) for wood storks includes all wetlands within 18.6 miles of the colony site. Losses in nesting productivity may be masked by seasonal fluctuations in numbers based on other natural causes affecting food availability, such as drought or flooding, which will also affect foraging efficiency and nesting success.

The 526 acres of wetland loss are impacts to both long and short-hydro-period wetlands. The FWS hydrological analysis predicts that another 2,500 acres of short-hydro-period wetlands would also exhibit a reduction in water levels and hydro-period. Based on the average carrying capacity, modeled prey availability by density and water depth, the average weight of freshwater wetland fish, a reduction in water levels and hydro-periods of the approximately 3,000 acres of wetlands could lead to harm of 146 wood stork nests. The significant modification and degradation of the foraging habitat within the CFA of the wood stork colonies would impair the stork's essential behavioral foraging pattern during the nesting season, resulting in injury or death to nestlings. Assuming an average of two nestlings per nest, as many as 292 nestlings may be taken each year.

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of wood storks:

- Collect hydrological data to ensure that hydrological impacts do not extend beyond predicted levels.

And that the following terms and conditions, which implement the reasonable and prudent measure described above, are necessary:

- Monitor hydrological effects throughout the action area.
- Monitor the productivity of storks utilizing the Corkscrew colony.
- Care must be taken in handling any dead specimens

h. Additional Coordination after Biological Opinion:

(1) 14 March 2003. On 04 March 2003, a meeting was conducted with the applicant, Corps and EPA. EPA requested a revised WRAP analysis.

(2) 31 March 2003. By letter dated 31 March 2003, the agent provided a WRAP analysis and mitigation conclusions for the proposed project in response to the request made by EPA at the 04 March 2003 meeting.

(3) 16 April 2003. By letter dated 16 April 2003, FWS stated that the proposed regional flow-way might adversely affect the regional wetland hydrology through truncating seasonal peaks and flows in the surrounding wetlands, thus affecting the productivity of the wood stork rookery. These changes in wetland hydrology may have an adverse effect on the ability of the wetlands to maintain a hydro-period of sufficient length to provide the fishery resource foraging base needed for the survival of the nestlings in the wood stork colony. FWS stated that to address these concerns, FWS is cooperating with the applicant and the Corps of Engineers to develop a wetland-monitoring plan to document and quantify hydrologic effects, both spatial and temporal, for the action area, and to develop a monitoring plan to evaluate the nest productivity of storks utilizing the Corkscrew rookery. FWS also stated that should both monitoring plans show adverse changes in the hydrology and the productivity of the rookery, the applicant and the Corps of Engineers have indicated there are opportunities available to improve the flow-way operation by adjusting water level flows through the South Florida Water Management District's regulation of the operation of the flow-way. Therefore, FWS no longer has an objection to the issuance of the Department of the Army permit.

(4) 28 May 2003. By memo dated 28 May 2003, the Corps Regulatory Division (RD) requested support from Engineering Division (EN-HH). RD requested: (1) interpretation of the expected change in the acreage of short-hydro-period wetlands located on, and in the near vicinity of, the Mirasol Project; (2) review of the hydrologic modeling provided by the applicant's engineer in support of the permit application; and, (3) review of a hydro-period assessment provided by the U.S. Fish and Wildlife Service (FWS) in their 21 February 2003 Biological Opinion.

(5) 30 June 2003. On 30 June 2003, the applicant, and staff from SFWMD, Corps, EPA and Johnson Engineering attended an onsite meeting. Access to all but a few portions of the site was reported to be limited because of high water conditions.

(6) 3 July 2003. By letter dated 03 July 2003, the applicant's engineer provided information concerning the design outline for the proposed flow-way. The agent stated that the "Mirasol" Flow-way is designed to enhance one of the few remaining overland flow pathways now available to the lower Cocohatchee Watershed. The pathway was among those identified by the South Lee County Watershed Plan (SLCWP), a study commissioned by the South Florida Water Management District (SFWMD), and completed in July 1999, prompted by the region-wide flooding which occurred during the 1995 wet season. Since that time, many of the recommended actions have been implemented, particularly in the westerly flowing pathways and rivers in Lee County. The agent stated that the Cocohatchee West is one of the four natural overland flow ways providing a southern outlet to the South Lee Watershed; which extends north into Hendry County and east to Immokalee, covering some 315 square miles. These historic pathways include the Cocohatchee East, the Corkscrew Canal and the Camp Keais Strand. The Mirasol Flow-way (Cocohatchee West) proposal, therefore, would represent another piece in an on-going region-wide effort, the aim being to mitigate for the loss of available historic overland flow pathways and, to the extent possible, restore the viability of the existing flow way. This was a SFWMD permit condition for the permitting of the Mirasol project. It is not necessary for the development of Mirasol.

The agent asserted that by creating a meandering shallow conveyance, this flow way proposal seeks to restore some measure of the historic flow capacity of an original drainage area over two miles wide. In order to assess the potential upstream impacts resulting from the flow-way, the agent alleges: (a) that runoff from the upstream watershed represents the single most significant factor in this site's hydrology and; (b) that the downstream wetlands, *i.e.*, the wetlands on the Mirasol site, would only experience standing water conditions after upstream runoff conditions have been reached. The agent stated that all the modeling results thus far show that the flow-way can have only a marginal impact on Corkscrew Swamp Sanctuary, especially when these locations are separated by over two miles of hydraulically inefficient overland flow pathways through upstream Sections 11 and 12. The agent also stated that to maintain the natural cycle of wet season wetland inundation, the flow way would be equipped with two weirs set at ground elevation. These would have the desirable effects of forcing runoff into upstream pools and encouraging longer detention times necessary for aquifer recharge. Under dry season conditions when the water table drops four to seven feet below ground, it is anticipated that the relatively shallow four-foot deep channel would in fact, go dry in much the same way as it happens now. It is also expected that the shallow aspect of the channel and its

gently sloping banks would encourage marshy conditions and increase the forage areas currently available to wading bird species such as the wood stork.

(7) 11 July 2003. By letter dated 11 July 2003, the applicant provided EPA a package of documents and correspondence pursuant to a 12 June 2003 meeting with EPA. A copy of the 11 July letter and documents is provided to the Corps of Engineers.

(8) 28 July 2003. By submittal dated 28 July 2003, the applicant provided a water quality analysis for the proposed project. The applicant stated that after making previous submittals, which evaluated first the project in total and secondly the project on a basin-by basin analysis, they were asked by the SFWMD to evaluate the project lake by lake. The reason for the request became apparent after calculating the reduction in treatment efficiencies as a product of reduced residence times caused by upstream flows.

(9) 30 July 2003. On 30 July 2003, the applicant briefed the Corps staff in Jacksonville.

(10) 8 August 2003. By letter dated 08 August 2003, the SFWMD notified the applicant's engineer that SFWMD staff reviewed the submitted calculations confirming that the permitted surface water management system is designed to reduce the post-development loadings of storm water nutrients to values that are equal or less than the loadings generated under pre-development conditions.

(11) 26 August 2003. By letter dated 26 August 2003, the National Wildlife Federation (NWF) and the Conservancy of Southwest Florida (Conservancy) provided comments on the Mirasol development and drainage system proposed in Collier County. The comments for the record supplement NWF's letter dated 30 October 2002 regarding the evaluation of impacts to panther habitat potentially caused by the Mirasol project. NWF requested notice of any action on the permit application, a public hearing, the opportunity to submit further comments based on new information as the review of this project proceeds and to include any additional comments in the decision-making record.

(12) 26 August 2003. By letter dated 26 August 2003, the applicant's agent stated that a draft wood stork management plan was submitted to FWS for review in May. The agent stated that FWS informed them via email dated 10 July 2003 that a FWS hydrologist was to review the plan and provide comments. The agent stated that numerous requests have been made and no comments have been received.

(13) 4 September 2003. By letter dated 04 September 2003, the applicant's agent provided a complete copy of the Cocohatchee Canal Phase 4 Improvements – Hydrologic-Hydraulic Assessment dated June 1999.

(14) 11 September 2003. By letter dated 11 September 2003, the applicant's attorney prepared supplemental information to respond to the questions and concerns that the Corps of Engineers raised at the 30 July 2003 meeting. The attorney indicated that information had been provided to Graham Story, Corps of Engineers, Hydrology/Hydraulics Section, to address the hydrology questions relative to the impact of the proposed regional flow-way to areas upstream of the Mirasol project. The attorney provided supplemental 404(b)(1) information which discussed avoidance, regional constraints, alternative sites investigated, minimization analysis, cumulative impact analysis, an analysis of potential wood stork incidental take, and a chronology of events.

(15) 16 September 2003. By electronic mail dated 16 September 2003, the Collier Audubon Society and Audubon of Florida forwarded a copy of a letter to the Corps. The letter was dated 12 September 2003 and was addressed to the EPA. The letter expressed concerns regarding the post-project hydrologic impacts from the Mirasol project. Audubon noted disparities in the modeling results between the applicant's consultant, who forecasts restoration benefits, and the FWS hydrologist who predicts at least 2500 acres of indirect wetland impacts and 526 acres of direct wetland impacts. Audubon also expressed concerns regarding the flow-ways regional effects and impacts on the Cocohatchee and Imperial River watersheds. Any decisions on the Mirasol project should be delayed until answers to these issues are obtained. As currently proposed, Audubon stated that the Mirasol project does not provide public benefits worth the loss of hundreds of acres of wetlands and their storage and water quality treatment functions, and thus should be recommended for denial.

(16) 2 October 2003. By letter dated 2 October 2003, addressed to the Environmental Protection Agency (EPA), Public Employees for Environmental Responsibility (PEER) requests that EPA veto ten wetlands development permits in southwest Florida because the permits would violate the Clean Water Act. The Mirasol project is one of the ten development permits.

(17) 3 October 2003. By letter dated 03 October 2003, the applicant's agent provided an assessment of the groundwater flow around weir WCS-03. Two (2) weirs would be constructed within the regional flow-way to aid in maintaining water levels during the dry season, and weir WCS-03 is located in the middle of the flow-way. To assess potential groundwater flow adjacent to the weir, computer modeling was completed to simulate conditions. Results of the simulation indicated a daily loss of 42,000 gallons per day or 0.065 cubic feet per second. During real conditions, the flow around the weir would be less.

(18) 7 October 2003. By letter dated 07 October 2003, Ms. Dawn Hatcher provided comments to the proposed project. Ms. Hatcher expressed concerns as an adjacent property owner and stated that the flooding in the area has gotten worse over the years and the need for the flow-way to help alleviate this problem.

(19) 23 October 2003. By letter dated 23 October 2003, National Wildlife Federation (NWF) provided comments on Mirasol and other projects and the combined effects of these projects on endangered Florida panther habitat. NWF requested a public hearing and the opportunity to submit further comments.

(20) 7 November 2003. By letter dated 07 November 2003, Commissioner Tom Henning, Chairman of the Board of Collier County, provided comments in support of the Mirasol flow-way. Commissioner Henning stated the project will correct the sins of the past and will benefit minorities in south Lee County.

(21) 18 November 2003. By letter dated 18 November 2003, Commissioner Ray Judah, Lee County Board of County Commissioners, provided comments in support of the Mirasol flow-way. Commissioner Judah stated the project is a prime example of a public private partnership designed to solve a regional problem.

(22) 21 November 2003. On 21 November 2003, representatives from the Corps and SFWMD met in West Palm Beach and discussed the Mirasol flow-way and associated issues.

(23) 26 November 2003. By letter dated 26 November 2003, the applicant submitted a response to the National Wildlife Federation comments.

(24) 11 December. By electronic mail dated 11 December 2003, the Corps requested additional information on "downstream effects" of the proposed flow-way. The Corps requested the following: the current average annual flow from Coco 4 downstream, the current peak flow from Coco 4 under any available data for 10 year, 25 year, etc., rainfall events; the expected delta, increase in flow from Coco 4, if Mirasol were built, without the flow-way, both annual and events; the expected delta, increase in flow from Coco 4, if Mirasol were built with the flow-way, both annual and events; and what is the expected impact on flows to other outlets from the basin, particularly the Imperial River.

(25) 16 December 2003. By facsimile dated 16 December 2003, the FWS provided its hydrological analysis for the Mirasol project. FWS stated that a "water-level surfaces" (spatial water depth hydro patterns) was generated

to estimate changes in available wood stork foraging habitat within the geographic area. The analysis required water level and topographic ground surface elevation data in National Geodetic Vertical Datum (NGVD). The water level surface was then converted to water depths by subtracting it from the ground surface elevations. Finally, the pre- and post- project water depth surfaces were compared to determine the amount of change in foraging opportunities for wading birds.

Since optimal foraging depths for wood storks are between 0.16 and 1.25 feet (2 and 15 inches), the FWS analyzed three water level depth classes: 0.0 to 0.5 feet, 0.5 to 1.0 feet, and 1.0 to 1.5 feet for three time periods: January, April and October 1998. Results of the analysis indicated that 2783 acres of wetlands in January were lost, representing a 50% decrease in available foraging habitat. A 23 % loss of wetlands occurred during April and October.

(26) 17 December 2003. By electronic mail dated 17 December 2003, the applicant's engineer provided comments to the request for additional information. On this same date, Corps representatives and the applicant's agent conducted a site visit of the proposed project.

(27) 18 December 2003. By letter dated 18 December 2003, Mr. William E. Besuden provided comments in support of the Mirasol/Woodlands and Bonita Beach Road flow-way. Mr. Besuden believes the project is a prime example of public/private partnership designed to solve a regional problem with little public expense. A similar partnership at the Brooks (a development west of I-75) was successful when a developer restored an historic regional flow-way (Halfway Creek) to predevelopment conveyance capacity. Mr. Besuden also believes that the flow-way is not and was never part of an interconnected wetland slough system. It is actually a default overland flow area caused by constriction of a larger area of sheet flow. And finally, Mr. Besuden believes that the regional flow-way has been designed to allow historic basin storage to take place on each adjacent project. During high water events, the system is designed to back flow into surface water management lakes. This system is in contrast to classic water management systems.

(28) 19 December 2003. By memo dated 19 December 2003, the Corps Engineering Division (EN-HH) prepared a draft report regarding their review of the hydrologic modeling for the proposed Mirasol development. The draft report was presented in four parts:

(a). Review of hydrologic modeling provided by the applicant's engineer in support of the permit application. EN-HH stated that the applicant's model uses a complicated process that employed three different hydrologic/hydraulic models. A fourth model was also used in an attempt to predict project-induced changes in seasonal water surface depth in the near

vicinity of the channel. The predicted changes in depth were then used to assess the wetland mitigation plan. EN-HH noted several basic flaws in the model set-up and disagreed with some of the input parameters used to calibrate and drive the model. It was EN-HH's opinion these modeling deficiencies could lead to output errors large enough to invalidate the seasonal water surface depths used to assess the wetland mitigation.

(b). Review of the hydro-period assessment provided by the FWS. EN-HH reviewed the FWS Biological Opinion for the project and also reviewed the document explaining the FWS methodology (paragraph 23 above). EN-HH reported that FWS calculated pre-project conditions by examining stage data from a monitoring gauge located near the upstream end of the proposed flow-way and another gauge approximately 11 miles to the northeast. Since the design objective of the regional flow-way was to lower the peak stage 0.5 feet at the upstream end of the proposed flow-way during a modified 25-year three-day synthetic storm event, FWS subtracted 0.5 feet from the stage data from the first monitoring gage. FWS then used a straight-line interpolation between both gauges to calculate post-project conditions. Using this methodology, FWS estimated at approximately 2,500 acres of wetlands containing 0 to 1 foot of surface water would be affected by the removal of 0.5 feet of water. Although the approach was valid, EN-HH disagreed with the fundamental assumption that the straight-line interpolation between gauges was appropriate. The 0.5-foot stage reduction is not constant and only occurs during certain flow regimes. In addition, the surrounding landscape creates resistance to flow and as you move further away from the flow-way, a lowered water level in the channel would have no effect.

(c). EN-HH evaluation of the expected change in the acreage of short-hydro-period wetlands located on, and in the near vicinity of, the Mirasol Project. EN-HH stated that an integrated surface water groundwater model capable of multi-year simulations is required for the evaluation of any large-scale wetland alteration in Southwest Florida, and that study of the effects of the regional flow-way to the relative depth of ponding is also important. This is an intense analysis beyond the scope of the permit evaluation time frame. However, based upon the data provided, at a gross scale, EN-HH can infer the regional flow-way would cause lower ponding depths near the flow-way and shorter overall hydro-periods than currently existing.

(d). Additional Considerations: EN-HH indicated that although the flow-way would lower peak stages and reduce the duration of periods of standing water, the hydrologists were unable to determine the basis for claiming any other results. EN-HH also stated that the project will alter the timing and distribution of freshwater flows to the downstream estuary. This is contrary to current planning and design objectives of both SFWMD and the Corps; the SFWMD and Corps are currently expending considerable public funds

to capture and store excessive freshwater flows and then release this water during dry periods. And finally, EN-HH stated that the project will accelerate the loss of freshwater from the regional system by directing it to tide. A regional analysis considering all uses might recommend these waters should rather be stored to meet public water supply demands or other needs.

(29) 22 December 2003. By letter dated 22 December 2003, Mr. Rank Vullo provided comments in support of efforts to restore historic surface water flow in southern Lee County. Mr. Vullo states that restoration of flow-ways is a primary fix that can reverse cumulative impacts caused by lack of regional planning.

(30) 26 December 2003. By letter dated 26 December 2003, Mr. Mel George provided comments in support the ongoing implementation efforts involving the South Lee County Watershed Plan.

(31) 28 December 2003. By letter dated 28 December 2003, Mr. Roger T. Randell provided comments in support of the Mirasol/Woodlands and Bonita Beach Road flow-way. Mr. Randell stated that based on the South Lee County Watershed Plan, the flow-way would solve a regional problem with little expense, reverse cumulative impacts caused by lack of regional planning in the past and have no detrimental environmental impacts.

(32) 29 December 2003. By letter dated 29 December 2003, Mr. John V. Halldin, Sr., provided comments in support of the proposed flow-way. Mr. Halldin stated that the best, most logical and least expensive solution is the permitting of a public regional flow-way solution as part of a private development.

(33) 29 December 2003. By letter dated 29 December 2003, Mr. Dave Redmond provided comments in support of the Mirasol/Woodlands and Bonita Beach Road flow-way, which will assist in the South Lee County Watershed Plan.

(34) 4 January 2004. By letter dated 4 January 2004, Mr. Stanley C. Herman provides comments in support of the proposed flow-way.

(35) 5 January 2004. On 05 January 2004, applicant met with Corps staff to review additional information needed.

(36) 7 January 2004. By letter dated 07 January 2004, the Corps acknowledged receipt of National Wildlife Federation's and Conservancy of Southwest Florida's request for a public hearing dated 26 August 2003.

(37) 7 January 2004. By letter dated 07 January 2004, the Corps acknowledged receipt of National Wildlife Federation's request for a public hearing dated 23 October 2003.

(38) 7 January 2004. On 07 January 2004 applicant met with Corps staff to review additional information needed.

(39) 9 January 2004. On 09 January 2004 applicant met with Corps staff to review additional information needed.

(40) 16 January 2004. On 16 January 2004, the applicant provided a response to the Corps request for more detailed information. Not all of the requested information was provided.

(41) 26 January 2004. By electronic mail on 26 January 2004, EPA provided comments to the Corps regarding the applicant's submittal dated 16 January 2004.

(42) 30 January 2004. By memorandum dated 30 January 2004, applicant's agent submitted a set of Mirasol Water Management Plans.

(43) 10 February 2004. On 10 February 2004, Corps met with applicant's agent and attorneys. Corps requested 26 items from the applicant's team. Items requested were submitted to applicant's team by electronic mail on 12 February 2004.

(44) 13 February 2004. By electronic mail on 13 February 2004, Corps requested information on 160-acre mitigation parcel. Applicant's agent responded to email on same day.

(45) 26 February 2004. Meeting conducted on 26 February 2004 in Jacksonville (District Office) with applicant's team, G.L. Homes, EPA and representatives from Corps. Several individuals participated by conference call. During the meeting it was agreed to revise and redo the hydrologic modeling for the project. The revised model would be run using three years of rainfall data to include dry, normal and wet conditions. The model would also be run to examine existing conditions, development without flow-way and development with flow-way.

(46) 1 March 2004. By electronic mail on 1 March 2004, EPA submitted comments to the Corps regarding conference call on 26 February.

(47) 9 March 2004. By electronic mail on 9 March 2004, EPA submitted more comments.

(48) 16 March 2004. By electronic mail on 16 March 2004, applicant submitted a plan of action to the Corps and members of the applicant's team in reference to the 26 February 2004 meeting.

(49) 22 March 2004. By electronic mail on 22 and 23 March 2004, Corps Engineering Division (EN-HH) provided comments on the plan of action submitted by the applicant. EN-HH comments involved the existing condition model set-up and boundary condition interaction.

(50) 25 March 2004. By telephone conversation on 25 March 2004, Jason Lauritesen from Audubon Corkscrew Swamp Sanctuary submitted comments to the Corps via Robert Barron (RD-P). Mr. Lauritesen stated that the 951 monitoring well has a floor elevation lower than the bottom of the proposed canal. Therefore, there is no data available to indicate water would remain or stand in the bottom of the canal. Mr. Lauritesen also stated that there is an assumption that the hydro-period on the Mirasol site is higher and longer. Mr. Lauritesen has noticed some high water marks, but the high water quickly disperses so the area appears dryer except for extreme storm events. Actual hydro pattern data had not been gathered so Mr. Lauritesen said he really didn't know what was happening. Mr. Barron asked Mr. Lauritesen if Corkscrew Swamp Sanctuary had an opinion on the hydro changes proposed by the South Lee County Watershed Plan (SFCWP) with the regional flow-way alternative. Mr. Lauritesen said he would take a look at the SLCWP. Mr. Barron also asked Mr. Lauritesen if Corkscrew Swamp Sanctuary had some idea on assessing the wood stork effect. Mr. Lauritesen was aware of the Biological Opinion prepared by the FWS but had no further ideas on assessing wood stork effects.

(51) 30 March 2004. On 30 March 2004, Corps and EPA representatives and the applicant's agent conducted a site visit of the proposed project.

(52) 9 April 2004. By conference call on 9 April 2004, members of the applicant's team discussed the modeling effort and status with the Corps.

(53) 12 April 2004. By electronic mail on 12 April 2004, applicant's agent forwarded a resolution by the Big Cypress Basin Board (SFWMD) to accept responsibility for the constructed flow-way. Corps indicated concern that flow-way should not be used as wetland mitigation.

(54) 12 April 2004. By electronic mail on 12 April 2004, applicant's attorney forwarded a draft letter addressed to the Corkscrew Regional Ecosystem Watershed (CREW) Executive Committee regarding CREW's accepting responsibility and ownership for the Mirasol preserve.

(55) 20 April 2004. By letter dated 20 April 2004, applicant's agent provided Corps with revised FLUCCS mapping of the project site and revised WRAP scores.

(56) 29 April 2004. By conference call on 29 April 2004, members of the applicant's team discussed the modeling effort and status with the Corps.

(57) 17 May 2004. By letter dated 17 May 2004, applicant submitted results of revised modeling. Submittal included responses to issues identified on 26 February 2004, S2DMM Documentation Report dated February 2004, Mirasol Report prepared by Tomasello Consulting Engineers, letter from CREW Land and Water Trust dated 12 May 2004, Big Cypress Basin Board (SFWMD) Resolution No. 04-4-1, and a hydrology summary from Turrell and Associates dated May 2004.

(58) 20 May 2004. On 20 May 2004, Corps met with applicant's agents. Applicant's agents provided revised drawings and monitoring plans.

(59) 10 June 2004. On 10 June 2004, Corps Regulatory Division (RD) provided a synopsis of the hydrologic analysis. According to RD, the approach and design of the applicant's new modeling appeared to have responded to many deficiencies noted by EN-HH in the original modeling. For the four locations modeled by the applicant, the change in duration and depth are consistent with what would be intuitively expected when comparing the relative distances of each location from the channel. While the Corps has not reviewed in detail the actual data and input files for the model, these results indicate that there is little reason not to rely on the professionalism of the applicant's consultants in the model setup. Therefore, the model results are sufficient to be considered as part of the WRAP analysis.

(60) 2 July 2004. By letter dated 2 July 2004, Corps requested clarification from the Florida Department of State Division of Historic Resources regarding the projects impacts on archaeological and/or historic properties.

(61) 9 July 2004. A meeting was conducted on 9 July 2004 to discuss hydrologic lift, WRAP analysis and monitoring. Applicant was informed that additional mitigation would be required.

(62) 12 July 2004. By telephone on 12 July 2004, the applicant agreed with the Corps WRAP analysis and agreed to purchase additional wetlands within the geographic vicinity of the proposed flow-way.

(63) 27 July 2004. By letter dated 27 July 2004, the Florida Department of State, Division of Historic Resources, requested that the project

area be subjected to a systematic, professional archaeological and historical survey. The applicant was telephonically notified of the request.

(64) 7 September 2004. By memo dated 7 September 2004, the Corps Engineering Division (EN-HH) prepared a final report regarding their review of the hydrologic modeling for the proposed Mirasol development. The report addressed four items:

(a). EN-HH evaluation of the expected change in the acreage of short-hydro-period wetlands located on, and in the near vicinity of, the Mirasol project. EN-HH stated that a model at the appropriate scale is not available and therefore EH-HH cannot provide any estimate.

(b). Review of hydrologic modeling provided by the applicant's engineer in support of the permit application. EN-HH noted several basic flaws in the model set-up, disagreed with some of the input parameters used to calibrate and drive the model, and had reservations regarding the interactive use of the four models used by the applicant. This analysis was previously communicated to Regulatory Division and the applicant and during a meeting in Jacksonville on 26 February 2004. At that meeting, all agreed upon a revised modeling approach. The applicant submitted the revised modeling on 17 May 2004. EN-HH stated that the applicant's modeling package of 17 May 2004 did not include information regarding the need for the regional flow-way and an assessment of the hydro-pattern impacts to upstream Corkscrew Swamp. EN-HH also stated that specific details of the applicant's revised model were not provided and EN-HH could not determine if some of the deficiencies in the original model had been corrected. EN-HH noted that the dry season ground water stages are higher with the project than without the project because irrigation water is pumped from the underlying aquifer system and is added to the surficial water table. According to EN-HH, efficient irrigation methods do not generate the apparent surplus water that is recharging the water table in the applicant's model runs. Since the hydro-patterns of the wetland preserve are somewhat dependent on this irrigation but not quantified by the applicant, EN-HH questions the long-term sustainability of the mitigation plan. EN-HH questioned the applicant's mean optimal water depth determination for cypress habitat and stated that cell 3,19 that was used as a surrogate indicator for regional impacts, may have been affected by boundary conditions.

(c). Review of the hydro-period assessment provided by the FWS. EN-HH's assessment was essentially the same as the draft memo of 17 December 2003. EN-HH disagreed with the FWS assumption that the straight-line interpolation over an arbitrary distance (the two gauges used by FWS) was appropriate.

(d). Additional Considerations. EN-HH stated that the project will alter the timing and distribution of freshwater flows to the downstream estuary. This is contrary to current planning and design objectives of both SFWMD and the Corps; the SFWMD and Corps are expending considerable public funds to capture and store excessive freshwater flows and then release this water during dry periods. EN-HH recommended that additional performance measures be used with respect to discharge volumes and seasonal timing. EN-HH also stated that the project would accelerate the loss of freshwater from the regional system by directing it to tide. With less water in dynamic storage within the wetlands, aquifer recharge may be reduced and there does not appear to be an analysis of the effects of this loss on public water supply. And finally, EN-HH stated that due to the potential for regional impacts, if permitted, EN-HH would like details of the final project for future modeling for the Southwest Florida Feasibility Study.

(65) 15 September 2004. By letter dated 15 September 2004, the Corps requested that the FWS reinitiate consultation on the Florida panther for Mirasol, Terafina, Bonita Springs Utilities, Miramar Addition and Florida Rock.

(66) 23 September 2004. By letter dated 23 September 2004, the National Wildlife Federation (NWF), Florida Wildlife Federation (FWF) and the Florida Panther Society (FPS) submitted comments to the Corps and FWS regarding the Florida panther. The letter requests that the NWF, FWF and FPS letter dated 23 September 2004 and five attachments be incorporated into the records of all pending 404 permit applications in or affecting panther habitat, that the public notice comment period be reopened, that the Corps reinitiate ESA consultation, that the Corps provide a confirmation letter that the NWF letter and five attachments had been included in the record for Mirasol, Terafina, Olde Cypress, Parklands and Miramar Lakes; and that the NWF be notified of any informal or formal action on these pending projects so it could submit additional comments.

(67) 23 September 2004. By letter dated 23 September 2004, the NWF and Conservancy of Southwest Florida submitted comments to the Corps and FWS regarding reopening the public notice comment period for Mirasol, Terafina, Olde Cypress and Parklands. The letter also requested that the Corps suspend the issuance of these permits and any other projects that rely on the Harper Methodology to assess project impacts on water quality, the Corps reinitiate ESA consultation with FWS, the Corps provide a confirmation letter that NWF and Conservancy of Southwest Florida letter dated 23 September 2004 and eight attachments had been included in the record for Mirasol, Terafina, Olde Cypress and Parklands and Miramar Lakes; and that the NWF be notified of any informal or formal action on these pending projects so they could submit additional comments.

(68) 28 September 2004. By letter dated 28 September 2004, the Florida Department of State, Division of Historic Resources, stated that it had received and reviewed a phase-one archaeological assessment report for the Mirasol parcel. Archaeological and Historical Conservancy Incorporated (AHC) had conducted the assessment. AHC did not identify any cultural resources during their investigation and recommended no further assessment. The State Historic Preservation Officer concurred with the recommendation.

(69) 30 September 2004. By letter dated 30 September 2004, the applicant provided a response to Engineering Division (EN-HH) regarding its review of the hydrologic modeling for the proposed Mirasol development. The applicant does not agree with EN-HH and provided the following reasons for the disagreement:

(a). The applicant stated that at the 26 February 2004 meeting (paragraph 7H(44) above), the parties determined that there was no further requirement to analyze the need for the regional flow-way since the applicant was not requesting any regional benefit as part of its mitigation plan. However, the applicant did update the regional model with the current hydrologic improvements in order to determine boundary conditions for the local model.

(b). The applicant stated that simulations were performed and that for the years simulated the resulting flood profiles demonstrated that the regional flow-way's impact was restricted to local reductions in stages because the ground slope and friction losses with overland flows dampen out any significant regional effects.

(c). The applicant provided justification for simulating the ground water/surface water interactions and that the purpose of the irrigation was to keep the landscaping alive. Not, as the Corps had assumed, as a long-term sustainable source of maintaining dry-season hydro-periods.

(d). The applicant stated that data from four cells was used to determine if the information provided was useful in the functional analysis and mitigation calculations. After it was determined to be useful, data from 14 additional cells was provided. The applicant also stated that EN-HH may have misinterpreted the graphs representing the maximum target water levels for the various vegetative communities.

(e). The applicant agreed with the analysis from EN-HH regarding the hydro-period assessment provided by FWS.

(f). The applicant stated that freshwater discharges into estuaries were previously analyzed during the permitting of Coco 3 and Phase 4. The Big Cypress Basin is monitoring the impacts of these discharges in the

estuary, which include more than just the Mirasol discharges. The applicant stated that the project should have little if any effect on public water supply.

(g). The applicant then addressed discrepancies in the EN-HH report. The performance criterion is to reduce the flood stage by 0.5 feet during the 25-year/3-day synthetic rainfall storm not a 5-year/3-day synthetic storm. The model was constructed to accurately reflect all groundwater interaction and included to make the model as accurate as possible. The applicant provided a summary and stated that all requests made and agreed to on 26 February 2004 had been completed.

(70) 12 October 2004. By letter dated 12 October 2004, the Corps acknowledged receipt of the two letters submitted by the National Wildlife Federation.

(71) 14 October 2004. On 14 October 2004, the applicant provided the Corps with a flow-way influence map and stage comparison graph for grid cell 7,11. Cell 7,11 will be a monitoring site and cell 8,11 will not be used because it is actually within the flow-way channel. The applicant also provided a revised mitigation plan for the flow-way preserve.

(72) 19 October 2004. By letter dated 19 October 2004, the FWS acknowledged the Corps' request to reinitiate formal consultation. The FWS requested additional information to facilitate its analysis.

(73) 25 October 2004. By letter dated 25 October 2004, the Corps forwarded the 19 October 2004 letter from the FWS to the applicant and requested that the applicant provide this additional information and respond back to the Corps.

(74) 25 October 2004. By letter dated 25 October 2004, the applicant provided the additional information requested by the FWS in their letter dated 19 October 2004.

(75) 28 October 2004. The Audubon of Florida, Collier Audubon Society, Conservancy of Southwest Florida, Florida Wildlife Federation and Nation Wildlife Federation wrote to the Regional Administrator for EPA on 28 October 2004 These organizations are concerned over the modeling effort conducted for Mirasol and requested that EPA elevate the project for a Washington level review.

(76) 3 November 2004. By letter dated 3 November 2004, Audubon of Florida, Collier County Audubon Society, Conservancy of Southwest Florida, Florida Wildlife Federation and Nation Wildlife Federation wrote again to

the Regional Administrator for EPA. The letter is almost identical to the letter dated 28 October 2004.

(77) 4 November 2004. By electronic mail on 4 November 2004, FWS requested additional information regarding the wood stork to ensure that the revised biological opinion contain the most current and correct information, as well as the best biological information available. The FWS also requested the most recent project description for the project; the most recent mitigation proposal for the project; results of the most recent forage fish surveys of wetlands on the project site; and results of the most recent hydrological studies of the project site.

(78) 1 December 2004. On 1 December 2004, the applicant provided the Corps with the information requested by FWS via electronic mail on 4 November 2004. The information was forwarded to the FWS.

(79) 9 December 2004. On 9 December 2004, the applicant provided the Corps with revised mitigation and monitoring plans, which clarifies the proposal.

(80) 10 December 2004. On 10 December 2004, representatives from the applicant, EPA and Corps met in Jacksonville to discuss another review of the hydrologic modeling for the subject project and the proposed excavated flow-way. This review would be conducted by the Hydraulics and Hydrology Branch, Engineering Division, and was requested by the Regional Administrator, EPA Region 4. Everyone agreed that the issue of the necessity for the regional flow-way was an issue outside the development and that the applicant had been given the design target for the flow-way by the SFWMD. There was a short discussion on model documentation and information needed by EN-HH.

(81) 20 December 2004. By letter dated 20 December 2004, the Deputy Executive Director for Water Resources (SFWMD) notified the District Engineer that the Mirasol flow-way was still considered to be an integral and necessary part of the SFWMD's strategy to alleviate flooding in this geographic area.

(82) 18 January 2005. On 18 January 2005, applicant model documentation and other requested information was received.

(83) 3 February 2005. On 3 February 2005, EN-HH advised the Regulatory Division that the applicant's submittal did not provide enough information but that EN-HH could provide a memo based solely on the information available from the applicant's reports. Regulatory Division requested a memo with whatever analysis was possible and to provide a description of missing information.

(84) 7 March 2005. By letter dated 7 March 2005, the National Wildlife Federation (NWF) and Florida Panther Society (FPS) submitted a joint letter to the Corps and FWS. NWF and FPS found errors in the Biological Opinions issued for Bonita Springs Utilities (application SAJ-1997-2228) and Ave Maria University (application SAJ-2003-9416) and requested that these errors be considered during the evaluation of Mirasol and five other pending applications. The NWF stated several concerns with the Ave Maria biological opinion including the sections regarding the action area; life history; habitat; reproduction and demography; mortality, trauma and disturbance; population dynamics; panther conservation strategy; environmental baseline; habitat assessment; and direct, indirect and cumulative affects. The NWF goes on to state that the perceived problems with the Ave Maria biological opinion and previous biological opinions are not being corrected and are being repeated in subsequent opinions issued by the FWS, which the NWF feels are not based on sound scientific method and should not result in issuance of DA permits. NWF and FPS requested that 18 documents be added to the administrative record for Mirasol and five other pending projects. These documents include:

(a) Landscape Conservation Strategy for the Florida Panther in South Florida dated 2002;
(b) FOIA request to FWS dated 10 March 2004;
(c) FWS letter to NWF dated 25 August 2004;
(d) NWF letter to FWS FOIA Appeals Office dated 4 October 2004;
(e) NWF letter to FWS dated 20 October 2004;
(f) FWS letter to NWF dated 4 November 2004;
(g) FWS FOIA Appeals Office to NWF dated 17 December 2004;
(h) "Giving Away the Store" dated January 2005;
(i) BiOp for Bonita Springs Utilities dated 18 January 2005;
(j) NWF letter to FWS FOIA Office dated 9 February 2005;
(k) FWS email to University of Tennessee dated 9 February 2005;
(l) BiOp for Ave Maria University dated 22 February 2005;
(m) FWS letter to NWF dated 22 February 2005;
(n) NWF letter to Corps and FWS dated 7 March 2005;
(o) NWF response to Maehr et al undated;
(p) NWF Ave Maria DRI map of panther telemetry points within 5 miles of the project site;
(q) NWF Ave Maria DRI map of panther telemetry points within 25 miles of the project site.

(85) 8 March 2005. By letter dated 8 March 2005, the National Wildlife Federation (NWF) and Florida Panther Society (FPS) submit a joint letter

to the Corps and FWS. NWF and FPS requested that their letter of 7 March 2005 and 18 attachments be replicated and placed in the administrative records of all pending Section 404 applications for projects in or affecting panther habitat with the exception of Ave Maria University. NWF and FPS do not want their letter and attachments added to the administrative file for Ave Maria University.

i. Revised Biological Opinion: On 9 March 2005, the FWS issued a revised biological opinion (BO) for the proposed project and the effects on the endangered wood stork (*Mycteria americana*) and the endangered Florida panther (*Puma concolor coryi*).

(1) Panther: It was the Service's conclusion that the development of Mirasol is not likely to jeopardize the survival and recovery of the Florida panther. The FWS indicated that since no critical habitat had been designated for the panther, no statement of impact to critical habitat could be made. The Service anticipated no direct mortality of panthers was expected from the proposed action. However, the Service does anticipate the incidental take of panthers in the form of harm and harassment associated with the direct loss of 800 acres of habitat within the primary zone. The amount of panther habitat affected by the proposed action is 0.04 percent, of an estimated two million acres of habitat occupied by the panther. This habitat loss represents 0.03 panther.

The Service believed the following reasonable and prudent measures are necessary and appropriate to minimize take of panthers:

- Ensure that no more than 800 acres of panther habitat will be lost as a result of the proposed action and that a minimum of 914 acres on-site and 145 acres off-site will be preserved and managed to benefit panther and its prey.

And that the following terms and conditions, which implement the reasonable and prudent measure described above, are necessary:

- That the applicant preserve and enhance 914 acres on-site, purchase 10 credits from Panther Island Mitigation Bank (estimated at 47 acres), and to preserve, enhance and restore another 32.47 wetland credits (estimated at 98 acres).
- That the Corps provides a copy of the permit to the FWS and that the Corps monitors the conditions regarding conservation measures.
- That the Corps provides documentation to the FWS for the completion of the on-site restoration and verification of the conservation easement.

- Notify appropriate agencies when locating a dead, injured or sick panther.
- That care should be taken when handling a dead, injured or sick panther.

The Service did not have any conservation recommendations.

(2) Wood Stork: It was the Service's conclusion that the development of Mirasol was not likely to jeopardize the continued existence of the wood stork. The FWS indicated that since no critical habitat had been designated for the wood stork, no statement of impact to critical habitat could be made. The Service believes that the wood stork habitat lost by the development will be offset by the preservation and enhancement of 827 acres of wetlands on-site and another 145 acres of wetlands off-site. The off-site wetlands include the 10-wetland credits purchased from Panther Island Mitigation Bank (converted to 47 acres) and the additional 32.74-wetland credits still required within the Cocohatchee drainage basin (converted to 98 acres). The lands proposed for development are hydrologically disturbed, exotic infested and are adjacent to existing urban areas. The proposed preserve areas are connected to larger tracts and consistent with the Service's wood stork goal.

The Service anticipated incidental take of wood storks would be difficult to detect for the following reasons: wood storks forage over a wide area, the CFA includes all wetlands within 18.6 miles of the colony site; and losses in nesting productivity may be masked by seasonal fluctuations in numbers based on other natural causes affecting food availability, such as drought or flooding, which will also affect foraging efficiency and nesting success. However, some level of take can be anticipated.

The 587 acres of wetland losses from direct effects and the 375 acres of wetland losses from indirect effects are impacts to mainly short-hydro-period wetlands. The applicant's on-site density studies and other studies conducted at Corkscrew Swamp were used to calculate an average fish density of 7-fish/sq meter. Different fish densities were used in the Service's previous opinion. Based on the average carrying capacity, prey availability by density and water depth, the average weight of freshwater wetland fish, the project could lead to harm of 23.5 wood stork nests. The significant modification and degradation of the foraging habitat within the CFA of the wood stork colonies would impair the stork's essential behavioral foraging pattern during the nesting season, resulting in injury or death to nestlings. Assuming an average of two nestlings per nest, as many as 47 nestlings may be taken per year.

The above take analysis assumes that all of the 962 acres of wetlands to be impacted were available for foraging despite the density of exotics that severely limits foraging opportunities and the lack of deeper water refugia. The analysis

also does not consider improvements to foraging habitat. Increased forage fish densities and improved foraging efficiency could result from the construction of the regional flow-way, littoral shelves and deeper water refugia.

The Service believed the following reasonable and prudent measures are necessary and appropriate to minimize take of wood storks:

- Collect hydrological data to ensure that hydrological impacts do not extend beyond predicted levels.

And that the following terms and conditions, which implement the reasonable and prudent measure described above, are necessary:

- Monitor hydrological effects throughout the project area.
- Monitor the productivity of storks utilizing the Corkscrew colony.
- Monitor forage fish productivity.
- Provide annual reports.
- Care must be taken in handling any dead specimens

The Service did not have any conservation recommendations.

j. Coordination after Revised Biological Opinion:

(1) 11 March 2005. By memorandum dated 11 March 2005, Engineering Division (EN-HH) submitted their hydrologic modeling review to Regulatory Division. The report was forwarded to the EPA. EN-HH did not provide any conclusions on some key issues.

- For the issue "The probability of success in achieving hydro patterns predicted," the memo states the submittal "did not provide any of the standard calibration statistics typically developed."
- For the issue "An overall evaluation of the proposed flow-way for flood reduction," the applicant's submittal "does not attempt to address regional flood reduction necessity." This would require either a before-after run of the regional model or an assessment of whether SFWMD's plan still needs this piece.
- For the issue "Possible changes to Corkscrew Swamp Sanctuary", the memo notes that the submittal focuses on the change in peak stage near the boundary of the local model but does not provide information on resulting changes in volume in the region.
- For the remaining two issues, the memo expressed concerns on the use of the model outputs. Regarding the number of model grids used to evaluate the ecological aspects, the memo deferred to Regulatory Divisions' selection of 18 cells in the model (though Regulatory is relying on the applicant's information that there are no upstream effects).

> Among other things, EN-HH repeated its earlier warning that the resolution of the stages is 1,000 X 1,000 foot and of an apparent inconsistency in the setting of the water level targets for the various habitat types (though Regulatory is relying on the applicant's hydro-pattern predictions to compare to those targets). Regulatory has been working with the applicant's ecological consultant on these and also developing non-model based special conditions.

(2) 6 April 2005. By electronic mail dated 6 April 2005, Regulatory Division summarized the Corps review of Mirasol's hydrology model.

(3) 15 April 2005. By electronic mail dated 15 April 2005, Collier County Audubon Society requested a copy of the 11 March 2005 hydrologic modeling review prepared by EN-HH. A copy of the report on compact disk was provided.

(4) 20 April 2005. By letter dated 20 April 2005, Audubon of Florida and Collier County Audubon Society (Audubon) submitted a joint letter to the Corps and EPA and expressed strong concerns regarding the Mirasol project. Audubon repeated earlier requests directed at EPA (3 November 2004) that EPA veto or elevate the project to EPA Headquarters for review, that no permit be issued until the public has an opportunity to comment on the revised BO issued by FWS, that there be an independent scientific review to verify and evaluate the hydrologic modeling effort put forth by the applicant, and that an Environmental Impact Statement be required.

In addition, Audubon raised other issues that they believe needed to be addressed before permit issuance. These other issues included a comparative analysis between 1995 and 2003 to determine if implemented recommendations from the South Lee County Watershed Plan have reduced the risk of flooding and a regional model to determine hydrologic effects of the Mirasol project on the Corkscrew watershed. Audubon also commented that the applicant's model was insufficient and without adequate modeling, the future ecological health of Corkscrew Marsh and the downstream estuary was in question. Audubon stated that the impacts of the project to the Cocohatchee Canal have not been addressed and the current project would likely reduce aquifer recharge. It was Audubon's opinion that the applicant's claim that the overall hydrology was wetter than historic conditions was unacceptable and unsupported. Audubon feels that the regional flow-way will have the most detrimental impacts on wood stork during rare years when water levels are higher than average.

(5) 28 April 2005. By letter dated 28 April 2005, the applicant responded to questions from EPA;

(6) 9 May 2005. On 9 May 2005, the Mirasol project site was toured by representatives from EPA, Corps and applicant.

(7) 10 May 2005. By letter dated 10 May 2005, the National Wildlife Federation (NWF) and The Florida Panther Society (FPS) submitted a joint letter to the Corps and FWS and concluded that, like the Biological Opinions for Bonita Springs Utilities and Ave Maria, the Mirasol Opinion was not based on the best available science and does not support a finding of no jeopardy to the Florida Panther. NWF and FPS request that the following attachments be added to the record:

(a) BiOp for Mirasol dated 9 March 2005;
(b) NWF, figure 1, wood stork nesting dated 10 May 2005;
(c) NWF, figure 2, wood stork nest productivity dated 10 May 2005;
(d) Collier County, Preliminary Findings, 2005 Residential Build-out Study undated circa March 2005.

(8) 13 May 2005. By letter dated 13 May 2005, the Florida Wildlife Federation submitted a joint letter to the Corps and EPA and requested that the EPA and Corps deny the subject permit due to unanswered fundamental questions.

(9) 17 May 2005. On 17 May 2005, a meeting was conducted at EPA's Regional Office with the applicant and staff from EPA and the Corps. Purpose of the meeting was to discuss the local hydrologic modeling conducted by the applicant and the Corps analysis of that local modeling.

(10) 23 May 2005. By letter dated 23 May 2005, the National Wildlife Federation (NWF), the Florida Wildlife Federation (FWF), the Conservancy of Southwest Florida, Audubon of Florida and Collier County Audubon Society submitted a joint letter to the Corps and EPA that provides comments on the availability of practicable alternative sites for the Mirasol project.

(11) 23 May 2005. By letter dated 23 May 2005, the National Wildlife Federation (NWF) and the Florida Wildlife Federation (FWF) submitted a joint letter to the Corps, EPA and FWS requesting that seven newspaper articles published by the St. Petersburg Times be added to the administrative records of Mirasol and eight other projects.

(12) 24 May 2005. By letter dated 24 May 2005, the applicant provided EPA with the results of local model outputs as requested by the EPA.

(13) 24 May 2005. By letter dated 24 May 2005, the National Wildlife Federation (NWF) submitted two documents and requested that the two

documents be included in the administrative record for Mirasol, Terafina, Olde Cypress and Ronto Development Parklands. The attachments include (a) "A Survey of Freshwater Fishes in the Hydric Flatwoods of Flint Pen Strand, Lee County, Florida" dated 2 May 2000; and (b) "Wildlife in Southern Everglades Wetlands Invaded by Melaleuca (*Melaleuca quinquenervia*)" dated 31 December 1997.

(14) 8 June 2005. By letter dated 8 June 2005, the Estuary Conservation Association identified themselves as an organization dedicated to the protection of the Wiggins Pass estuarine system and requested that the Mirasol development and associated drainage ditch be denied.

(15) 8 June 2005. On 8 June 2005, Corps and EPA staff met in Atlanta to discuss Mirasol hydrologic modeling.

(16) 10 June 2005. By letter dated 10 June 2005, addressed to the Nation Wildlife Federation (NWF), the Regional Administrator for EPA Region 4 acknowledged a joint meeting with the Corps of Engineers on 17 June 2005 to hear concerns regarding the Mirasol project in Collier County.

(17) 14 June 2005. By electronic mail on 14 June 2005, Collier County Audubon Society submitted a technical review of the Mirasol hydrologic modeling. The technical review consists of three attachments identified as:

(a) Letter dated 13 June 2005 from the National Wildlife Federation, Audubon of Florida and the Florida Chapter of the Sierra Club. The letter was addressed to the Corps and EPA and references an attached report by Thomas Van Lent, Ph. D., and P.E.;
(b) Resume of Dr. Thomas Van Lent;
(c) Memorandum dated 9 June 2005 entitled "Review of Mirasol Project Hydrologic Modeling" conducted by Thomas Van Lent, Everglades Foundation.

(18) 14 June 2005. By electronic mail on 14 June 2005, the Corps critiqued the "Review of Mirasol Project Hydrologic Modeling" conducted by the Everglades Foundation.

(19) 17 June 2005. Representatives from EPA Region 4 and Jacksonville District Corps of Engineers met with representatives from the National Wildlife Federation and other affiliated environmental organizations to hear concerns regarding the Mirasol project.

(20) 21 June 2005. By letter dated 21 June 2005, addressed to the National Wildlife Federation (NWF), the Regional Administrator for EPA Region 4 acknowledged receipt of NWF's letter dated 13 May 2005.

(21) 5 July 2005. By letter dated 5 July 2005, the Conservancy of Southwest Florida (Conservancy) submitted information to EPA and the Corps regarding the Harper Methodology. The Conservancy urged the EPA and the Corps to reject the Section 404 permit for Mirasol based on the failure of the applicant to demonstrate that the project will not cause or contribute to significant degradation of waters of the United States. Included as attachments to the letter are:

(a) Peer Review of Stormwater Management Criteria in Evaluation of Alternative Stormwater Regulations for Southwest Florida dated July 2004;
(b) Deposition of Harvey Howard Harper, III, Ph.D., P.E. dated 2 January 2004;
(c) Continued Deposition of Harvey Harper, Ph.D., P.E. dated 5 January 2004; and
(d) Other letters and emails regarding water quality analysis for Mirasol.

(22) 6 July 2005. By letter dated 6 July 2005, addressed to the Florida Wildlife Federation (FWF), the Regional Administrator for EPA Region 4 acknowledged receipt of FWF's letter dated 13 May 2005.

(23) 17 July 2005. On Sunday, 17 July 2005, the Conservancy of Southwest Florida (Conservancy) purchased a full page ad in the Naples Daily News. The ad indicated that the project will destroy 1,600 acres of wetlands and it is feared would also drain an additional 1,000 acres including a portion of nearby Corkscrew Swamp Sanctuary. The ad also stated that the massive wetland losses will severely impact the endangered wood stork and Florida panther populations and negatively impact water quality in the Wiggins Pass estuary and Cocohatchee River, both of which are already designated as Outstanding Florida Waters. Readers were asked to write or email the Corps and EPA. Colonel Carpenter's and Jimmy Palmer's address and email address were provided. As a result of this full page ad and subsequent flyer mailed by the Conservancy, the Corps received 285 emails opposed to the Mirasol project, 78 letters opposed to the Mirasol project, one email in favor of the Mirasol project and one email that was not opposed to the project provided normal permitting conditions were met.

(24) 25 July 2005. By letter dated 25 July 2005, the Conservancy of Southwest Florida (Conservancy) submitted to the Corps a copy of the EPA peer review of the Harper Methodology entitled "Comments Summary Report: External Peer Review of 'Evaluation of Alternative Stormwater Regulations for

Southwest Florida' (The 'Harper Method')" dated April 2005. The Conservancy requested that the Corps consider the peer review in deliberations about the Mirasol permit.

(25) 26 July 2005. By electronic mail on 26 July 2005, EPA submitted a draft review of the Mirasol model to the Corps.

(26) 26 July 2005. On 26 July 2005, a conference call was conducted between the Corps, EPA and SFWMD.

(27) 28 July 2005. By letter dated 28 July 2005, the National Wildlife Federation (NWF) and The Florida Panther Society (FPS) submitted a joint letter to the Corps and FWS in response to the issuance of a Biological Opinion (BiOp) for G.L. Homes (Terafina) (Corps application number SAJ-1996-3501). NWF and FPS concluded that that Terafina BiOp, as well as the BiOp for Bonita Springs Utilities, Ave Maria University and Mirasol, was not based on best available science and does not support a finding of no jeopardy to the Florida panther. The Terafina BiOp also failed to use best available science to support its finding of no jeopardy to the wood stork. NWF and FPS stated that the potentially significant effects of future development projects warrant preparation of an Environmental Impact Statement. NWF and FPS requested that three attachments be added to the administrative records for 11 projects. The three attachments include the BiOp for Terafina dated 14 June 2004, revised BiOp for Terafina dated 21 March 2005, and the BiOp for Mirasol dated 21 February 2003.

(28) 3 August 2005. By electronic mail dated 3 August 2005, EPA forwarded questions to the applicant regarding a letter from Lewis, Longman & Walker, P.A. dated 27 April 2005.

(29) 8 August 2005. By electronic mail dated 8 August 2005, EPA forwards to the Corps, four documents submitted by the SFWMD.

(30) 8 August 2005. By letter dated 8 August 2005, Mr. Tom Henning, Commissioner, Board of Collier County Commissioners, submitted a letter in support of the Mirasol project and flow-way.

(31) 15 August 2005. By letter dated 15 August 2005, the Executive Director of the South Florida Water Management District (SFWMD) notified the Corps and EPA that SFWMD was still strongly supportive of the proposed regional flow-way and how it relates to the South Lee County Watershed Plan.

(32) 18 August 2005. By letter of transmittal dated 18 August 2005, the applicant's consultant submitted a report entitled "Mirasol Flow-Way Wetland Hydrological Analysis" dated August 2005.

(33) 18 August 2005. By letter dated 18 August 2005, the applicant's attorney submitted a two-part report entitled (A) "Offsite Practical Alternatives and On-Site Avoidance and Minimization Analysis" dated August 2005, and (B) "Mirasol Analysis of Flow-Way Hydrologic Benefits and Response to EPA Comments Regarding Potential Adverse Impacts on Adjacent Wetlands."

(34) 29 August 2005. By letter dated 29 August 2005, the applicant's consultant submitted sections of the Draft South Golden Gate Estates Project Implementation Report regarding duration and depth of inundation for various habitat types in south Florida.

(35) 30 August 2005. By letter dated 30 August 2005, the applicant's attorney submitted a document that was omitted from letter dated 18 August 2005.

(36) 31 August 2005. By letter dated 31 August 2005, the applicant's attorney submitted a response to EPA's questions dated 3 August 2005.

(37) 1 September 2005. By letter dated 1 September 2005, Holland & Knight LLP submitted a letter to the Corps regarding a memorandum dated 5 August 2005 from EPA General Counsel and its application to the state water management agencies and oversight of water transfers.

(38) 1 September 2005. By letter dated 1 September 2005, the applicant's consultant submitted a response to National Wildlife Federation's letter dated 13 May 2005.

(39) 2 September 2005. By letter dated 2 September 2005, the Corps asked EPA for final comments regarding the subject application.

(40) 2 September 2005. By letter dated 2 September 2005, the National Wildlife Federation submitted a letter to the Corps and FWS regarding a document referred to as Kautz et al. (in review). This document has been referenced throughout the Biological Opinions (BiOp) for 11 projects but has since been revised substantially in response to peer review comments. Because the BiOps for the 11 projects rely in part upon the document to reach a "no jeopardy" conclusion, they no longer constitute best available science and these BiOps need to be re-evaluated.

(41) 7 September 2005. By letter dated 7 September 2005, the FWS notified the Corps that the National Wildlife Federation (NWF) and the Florida Panther Society (FPS) had sent several letters expressing concerns about statements in a number of Biological Opinions. The FWS had carefully reviewed these letters and determined that re-initiation under Section 7 of the ESA is not warranted.

(42) 13 September 2005. By letter dated 13 September 2005, the applicant's attorney submitted a letter to the Corps and EPA stating all issues had been addressed and urged that the permit should be issued without further delay and prior to next summer's storm season.

(43) 14 September 2005. By letter dated 14 September 2005, the Conservancy of Southwest Florida (Conservancy) notified the Corps and EPA that the applicant has made unsubstantiated claims that water levels and flows on Mirasol are much higher than historic levels. The Conservancy stated that monitoring data from surficial aquifer wells have shown either a decrease or no increase during the last twenty years. The Conservancy submits several reports to support their claim.

(44) 29 September 2005. By electronic mail dated 29 September 2005, Audubon of Florida and Collier County Audubon Society provided the Corps and EPA information that calls into question the applicant's claims that the area has experienced an increase in stage and hydro-period from historical levels.

(45) 4 October 2005. By letter dated 4 October 2005, the EPA responded to the Corps letter dated 2 September. EPA stated they have still not seen any technical documentation supporting proponent's conclusion that a flow-way is needed to address regional flooding, and that EPA views proposed residential development as a fundamentally different project from a flow-way. EPA asks for the Corps view on the availability of practicable alternative locations for the Mirasol project, on other designs that would further reduce fill impacts, and wants the Corps to address cumulative impacts on the Cocohatchee and the broader Corkscrew Regional Ecosystem Watershed. Finally, the letter advises the Corps that EPA is waiting to receive a final summarization of the cell-by-cell wetland analysis for the flow-way, *i.e.*, acres deleteriously affected, acres not affected, and acres positively affected. The agency will reserve comment on the adequacy of the proffered mitigation plan until it receives this information.

(46) 6 October 2005. Major Jay Arend from the City of Bonita Springs submitted a copy of a letter dated 6 October 2005 to the Collier County Board of County Commissioners in support of the flow-way permits through the Mirasol project.

(47) 13 October 2005. By letter dated 13 October 2005, the applicant submitted to the Corps and EPA hydrological and WRAP analyses based on duration of inundation and water depth.

(48) 13 October 2005. By letter dated 13 October 2005, the Bonita Springs Fire Control & Rescue District encouraged the Corps to permit the Mirasol development and to construct the regional flow-way.

(49) 14 October 2005. By letter dated 14 October 2005, the applicant's attorney responded to comments submitted on 9 June 2005, from Thomas Van Lent, Senior Scientist, Everglades Foundation, directed to the Everglades Advisory Council West Coast Task Team.

(50) 14 October 2005. By letter dated 14 October 2005, Audubon of Florida, Collier County Audubon Society, Florida and National Wildlife Federations, and the Conservancy of Southwest Florida, requested that the Corps reinitiate Section 7 consultation with the U.S. Fish and Wildlife Service regarding the federally endangered wood stork. The letter contained a memorandum from Brad Cornell (Audubon of Florida/Collier County Audubon Society) regarding the importance of Mirasol to wood stork foraging and data to refute the applicant's assertion that the site is wetter today than historically.

(51) 14 October 2005. By letter dated 14 October 2005, Audubon of Florida, Collier County Audubon Society, Florida and National Wildlife Federations, and the Conservancy of Southwest Florida, informed the Corps, EPA and Big Cypress Basin that the proposed public benefits of the project are non-existent and that the most current information confirms significant regional ecological harm if the project is constructed. The letter requested a public hearing and that alternatives be examined, other than the construction of the Mirasol drainage channel. Two actions discussed include the removal of a dilapidated bridge over the Imperial River and the modification of the berm along the north side of the Cocohatchee Canal.

(52) 17 October 2005. By letter dated 17 October 2005, the applicant submited revised hydrological and WRAP analyses based on duration of inundation and water depth.

(53) 19 October 2005. By electronic mail and letter dated 19 October 2005, Audubon of Florida, Collier County Audubon Society, Florida and National Wildlife Federations, and the Conservancy of Southwest Florida, provided a copy of the U.S. Government Accountability Office's report on the Corps lack of effective oversight to ensure that compensatory mitigation occurs for permitted 404 wetland projects. These non-government organizations urged the Corps to deny the permit and instead facilitate true watershed restoration.

(54) 4 November 2005. In a letter dated 4 November 2005, the applicant refuted the information provided by the Audubon of Florida and Collier County Audubon Society in their letter dated 29 September 2005 and stated that the draft report prepared for the City of Bonita Springs suggests wetter conditions on the Mirasol site in 2002 compared to 1991.

(55) 4 November 2005. In a memorandum dated 4 November 2005, EN-HH summarized the first review of the applicant's modeling. The first review concluded that the modeling as presented did not provide a sufficient level of detail to ascertain the necessity of the regional flow-way, nor did the supporting documentation provide such justification. In subsequent meetings with the applicant, EPA and the Corps, additional examination of the applicant's modeling was conducted to more adequately determine the effects of the proposed flow-way. This additional examination again depicted no regional differences as a result of the proposed flow-way and yielded potential adverse impacts to the adjacent wetland areas. Furthermore, no additional technical documentation has been presented indicating that the flow-way is, in fact, needed to address regional flooding.

(56) 14 November 2005. Between 9 and 14 November 2005, the Corps received 312 emails requesting that the Corps deny the Mirasol permit.

8. PROJECT PURPOSE AND ALTERNATIVES:

a. Project Purpose: The Clean Water Act 404 (b)(1) Guidelines, 40 CFR Part 230, establish that no discharge of dredged or fill material shall be permitted if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. Under the Guidelines "aquatic ecosystem" means waters of the United States, including wetlands, and "wetlands" are considered "special aquatic sites."

The first step in the practicable alternatives analysis is to define the project purpose. The project purpose is part of the 404 (b)(1) analysis, and the Corps is responsible for controlling every aspect of this analysis. The Corps distinguishes between basic project purpose and overall project purpose. Defining the basic project purpose is critical in determining water dependency and is viewed in light of the function of the activity. Therefore, each component element of a proposal must be analyzed separately and in terms of its actual water-dependent or non-water-dependent function. (*Plantation Landing Resort* Permit Elevation (1989)). Where the activity associated with a proposed discharge in a special aquatic site does not need to be within the special aquatic site to fulfill its basic purpose it is not ``water dependent" and practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site,

all practicable alternatives to the proposed discharge not involving a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise. As indicated above, the basic project purpose of the subject project is to construct a residential community with a golf course amenity. Since houses and golf courses do not have to be located within a "special aquatic site" to fulfill the basic purposes of providing shelter and land-based recreation, the project is not "water dependent" and the presumption that practicable alternatives exist is applicable.

The applicant received its permit from the South Florida Water Management District (SFWMD) in connection with development of the Mirasol project, which requires construction of the regional flow-way as a condition of the permit. As a result, the applicant has added the flow-way as a component element of its proposal and wishes to have it included as part of the basic or overall project purpose. As stated, component elements of a proposal are evaluated separately for water dependency. A flow-way is an activity that may or may not be water dependent depending upon the purpose it serves. If the purpose is for water conveyance the flow-way could be constructed through uplands or wetlands and would not be water dependent. If the purpose is to drain wetlands it may have to be cut through those wetlands and is probably water dependent. If the purpose is flood control it may need siting in waters, uplands, or both and again may not be water dependent.

The stated purpose of this proposed flow-way is to provide regional flood control. The Corps does not believe that a regional flow-way is an integral part of a residential golf-course community and does not believe that it fits within the basic or overall project purpose of the community. A regional flow-way has constructed components extending outside the housing/golf development and has wide-ranging direct and indirect impacts that are beyond the scope of this permit analysis. The SFWMD imposed a similar condition upon the neighboring proposed development Terafina, permit application number SAJ-1996-3501.

In the applicant's most recent submittal dated 18 August 2005, the applicant claims that since the regional flow-way must be located in a special aquatic site in order to achieve its purpose the entire project becomes water dependent and, the Guidelines' presumption that practicable alternatives exist is inapplicable. Flow-ways are not essential components of housing developments, with or without golf courses. The basic purpose is not changed.

The applicant in its geographic analysis of alternative sites does not mention a flow-way as a component of the proposed development. Alternatives must be compared using the same set of established criteria or the analysis is meaningless. In its earlier submittal dated 9 September 2003, applicant emphasized the regional flow-way was <u>not</u> a component of the Mirasol water management system, that Mirasol does not need the regional flow-way to

function, nor is it needed by any of the other neighboring developments required to contribute to the proposed regional flow-way. The applicant further stated that the Mirasol development can easily be constructed without the flow-way by simply adding fill, a cheaper alternative than participation in the regional flow-way. The applicant didn't elaborate about this added fill and it is assumed that without the surface water drainage associated with the flow-way this fill would be used to elevate the roads and structures for purposes of flood protection to a height above the outfall elevation of the surface water management system.

The overall project purpose as determined by the Corps, as published in the public notice and as indicated in paragraph three above is to "construct an economically viable upscale residential and golf course community in northern Collier County." Admittedly, this is a fairly restrictive purpose but it is less restrictive than the applicant's stated project purpose which is "to construct an economically viable upscale residential and golf course community in northern Collier County west of CR 951 and in close proximity to an activity center." Also, as stated above, the applicant now wishes to include the regional flow-way in the overall project purpose. The Corps views the regional flow-way as being nonessential to fulfill the purpose of a project to create upscale housing; and the applicant has expressed agreement in its correspondence to the Corps and stated that it doesn't need the flow-way for the fill or for the drainage. Consequently, the Corps looks upon the proposal to include the regional flow-way as a project component only because it is required as a condition to the permit issued by the South Florida Water Management District. The Corps disagrees with the applicant and, as stated above, does not consider the flow-way as part of the basic or overall project purpose. The concept of water dependency purpose cannot be influenced or altered by attempts to integrate water dependent components into non-water dependent components.

b. Avoidance (No action, uplands, availability of other sites): To assist with the development plans, the applicant consulted with a real estate appraiser and market analyst to perform a comprehensive survey of the market in Fort Myers, Bonita Springs, and Naples. The Corps has no knowledge of when the applicant purchased the property, but believes that planning for this project began as early as 1997 at which time the applicant stated trends showed increasing population, housing, employment opportunities, family income, and general real estate values, primarily due to proximity to the Gulf of Mexico and a subtropical climate. The primary market area of the survey included south Fort Myers, Bonita Springs, and North Naples. The analysis favored the North Naples market as the fastest growing area within the time horizons contemplated in the development plan (five to seven years). The North Naples market was broken down into the following five (5) categories of product:

- Large Mixed Use Planned Community (DRI)
- Private Golf Club Community
- Concept "Bundled Golf" Community

- Standard Community
- Resort-Retirement Community

Based upon the market survey, and the available inventory, sales performance, product type and pricing in surrounding communities, applicant determined that a Private Golf Club community would be the most viable project for the market area. Private Golf Club communities are planned developments that are smaller than Large Mixed-Use Developments of Regional Impact (DRI) and focus on a central golf club and related amenities. These communities include housing ranging from 200 to 800 units, and private golf clubs featuring equity memberships for both residents and the general public. These communities typically do not offer boating or beach access.

The applicant performed a geographic alternatives' analysis based upon the suggested project purpose: to construct an economically viable upscale residential and golf course community in northern Collier County west of CR 951 and in close proximity to an activity center, and not the broader purpose defined by the Corps. The applicant believed that economically a mixed upscale residential/golf course community was the preferred project combination for northern Collier and southern Lee Counties. The applicant indicated that the location of the project site was based upon regional constraints. For instance, the project purpose limited possible alternatives to sites that were west of CR 951 on a main road close to I-75, that were in close proximity (1-2 miles) to an activity center, and that were in or adjacent to the urban service boundary. Geographically, alternative sites were further limited by several existing regional constraints and existing development. Specifically, residential development in southeast Lee County and the Bonita Springs area is severely restricted by Density Reduction/Ground Water Resource (DRGR) land use designations. In addition, Collier County has undertaken a rural fringe area assessment as part of its comprehensive planning responsibilities, a goal of which is to limit urban sprawl in areas east of CR 951. Collier County has established future development corridors along Immokalee Road, US 41, and I-75, but also has severely restricted development north, east, and south of the target area with Natural Resource Protections Areas (NRPA) in the Corkscrew Sanctuary area and North Belle Meade.

The applicant also identified five alternative sites with potential to meet the project purpose. The applicant identified the following as the primary search criteria for a project site:

- Location: The applicant stated that an earlier market analysis looked at properties in the broader area and that no properties of suitable size were available west of I-75. Furthermore, at that time CR 951 was considered a rule-of-thumb limit to financially successful development in the area. In 1999,

there were no successful developments east of CR 951. Projects in the CR 951 corridor had recently been permitted but had no track record of sales. While potential sites existed east of CR 951, the applicant was concerned that the distance to town, the beaches and other amenities utilized by residents of upscale golf course communities would be too great to be economically viable within the development timeframes of the project. Moreover, the proposed development site for the new development must be located west of CR 951 in an effort to avoid the significant wildlife and habitat issues and restrictive land use issues associated with lands to the east of CR 951.

- Size: The applicant's market analysis indicated that the best use of the property would be for an upscale private golf course community. Quality golf course designs typically require from 150 to 180 acres. The number of residential units of varying sizes and price ranges necessary to support a golf course varies depending upon the level of development involved. For an upscale development in this area, typically 300 to 400 acres of developable land are needed per 18-hole course. Taking into account additional land needs of approximately 200 acres of lake excavation (necessary to acquire fill), approximately 100 acres for infrastructure, and land required to be set aside for on-site environmental purposes the applicant estimated that the site needed to be between 1,000 and 1,500 acres to support his project purpose.

- Access: The site must be located on a main road near I-75 and within one to two miles of an activity center. An activity center is a land use designation within the Collier County Comprehensive Plan meaning one-quarter mile squares around major intersections that are designated for intensive commercial development. The general concept of activity centers is to concentrate commercial development at convenient locations to reduce traffic impacts and minimize strip commercial development. Since the applicant is not a commercial developer the applicant did not want to be located in an activity center but it was important to the marketing of the project and local planning concerns that it be located within a short distance from an activity center.

- Local Land Use: Appropriate zoning for an approximately 799-unit residential development must be in place or attainable. The applicant did not want to exceed the unit threshold for a Development of Regional Impact (DRI).

- Infrastructure: The site must be in or adjacent to the urban service boundary and have access to water and sewer.

- Availability: The site must have a willing seller(s), priced within market range.

- Wetland/Unique Habitat: The site must be able to be developed in an environmentally practicable manner while meeting the overall project purpose. The applicant sought a site with little to no historically high quality wetlands.

- Site layout: The site must support a land design plan that is economically viable and environmentally practicable.

The following is a summary of the alternative sites considered based on these search characteristics. The applicant provided a detailed description and analysis of each alternative site in the market area.

Parklands: This property consisted of approximately 900 acres. It was generally appropriate for the proposed development, but was under contract to another developer at the time the applicant entered the market and therefore was not considered further.

Parklands East: This property was approximately 300 acres. The property's location was generally appropriate for the proposed development, but was too small to accommodate the Mirasol project. Further, the property was under contract to another developer at the time the applicant entered the market and therefore was not considered further.

Twin Eagles: This property was also under contract at the time the applicant entered the market. This property is approximately three miles east of CR 951 and therefore fell outside the location criteria and the access criteria. Further, due to the low residential densities allowed, the Mirasol project could not be accommodated on site. The property was outside the urban service boundary and was in litigation at the time the applicant entered the market.

Heritage Bay/Mule Pen Quarry Area: This property contains an activity center and mining operation that are inappropriate for an upscale golf community. This property is also just east of CR 951 (immediately east of Mirasol) and outside the selection criteria.

Mirasol (Selected Site): This property is approximately 1,713 acres in size and is owned/controlled by the applicant. The site is located in northeast Collier County, west of CR 951 and approximately 2.5 miles east of I-75. The site is also adjacent to an activity center. The closest activity center to the project site is the intersection of CR 951 and Immokalee Road. The proposed site is located just outside of the activity center boundary and the project can be developed such that residents can access the activity center internally without having to travel on Immokalee Road. The site is heavily impacted by exotic vegetation and, according to the applicant, floods annually. The site is zoned for approximately 800 units and has water and sewer at its southern boundary

(Immokalee Road). The site is located partially in and adjacent to the urban service boundary

The following matrix summarizes the results of the applicant's search for an appropriate site for the Mirasol project.

Summary Matrix for Alternative Site Analysis

Sites/Factors	Parklands	Parklands East	Twin Eagles	Heritage Bay/ Mule Pen	Mirasol
Location			X	X	
Size		X			
Access			X		
Local Land Use			X	X	
Infrastructure					
Availability	X	X	X		
Wetland/Unique Habitat					
Site Layout		X			

X – Did not meet Search Criteria

The selected site was considered to be unique in satisfying all the needs for the type of development the applicant desired for the following reasons:

- It is west of CR 951
- It is on a main road near I-75
- It is in close proximity to an activity center
- It has appropriate zoning and utilities (or appropriate zoning and utilities were obtainable)
- Much of the site previously has been disturbed by agriculture activities, altered wetland flows, and exotic vegetation infestation
- It is large enough to accommodate an economically viable residential golf course community, and
- It is owned/controlled owned by the applicant.

The applicant also stated his opinion that the site has been overrun by exotic (melaleuca) infestation and is being altered more and more by the unnatural annual hydrologic patterns to which the property is now subject, because much of the property currently receives too much water due to the constricted nature of the existing flow-way. The applicant stated that if nothing were done on this property, these conditions would worsen and the entire property would continue to degrade, exotic vegetation would continue to flourish and multiply, and the value of the property to resident and transient wildlife species would continue to decline. Thus, from an economic, logistical, and environmental perspective, the

applicant believed that the selected site was the most suitable and practicable alternative in the market area.

The Corps concurs that under the applicant's definition of overall project purpose the applicant's selected site does appear to be the best of the few alternatives reviewed. And, although the applicant may have narrowly defined the desired project location as west of CR 951, two sites east of CR 951 were examined. The Corps also agrees that the proposed site suffers considerably from invasion of exotic vegetative species and finds that based on the degraded condition of the on-site wetlands the alternatives search is commensurate with the severity of the environmental impacts and the current functionality of the wetlands.

In view of the above analysis, under the no action alternative the subject applicant would not have a viable project to construct. Most of the parcels examined by the applicant have been purchased by other developers and these projects are, or will be, under construction in the near future. The selected site is located in a very desirable area along Immokalee Road with appropriate zoning for development and with access to water and sewer utilities. If the applicant doesn't develop the selected Mirasol site, it would be reasonable to expect that pressure from other developers to sell or perhaps subdivide will increase. Admittedly, the Corps project purpose is not convincingly satisfied, but the Corps has agreed to review the complete file and not to make a recommendation based solely on the avoidance prong of mitigation sequencing.

c. <u>Minimization (modified project designs, etc.)</u>: The project site selected by the applicant for the Mirasol project is located in the Cocohatchee West drainage basin. During discussions and permitting with the South Florida Water Management District (SFWMD) the applicant was required to design and build a regional flow-way to compensate for the loss in historic flood storage in the basin. Specifically, SFWMD required that the flow-way reduce peak flood stages by 0.5 feet at the Section 10/11 line within the project site.

The origin of the need for this flow-way can be traced to the severe flooding in the Bonita Springs area of Lee County (northwest of Mirasol) during 1995. As a result of that flooding, SFWMD commissioned the South Lee County Watershed Plan that was completed in 1999. The study concluded that the Imperial River, Estero River and other conveyance systems have progressively become more and more constricted because of development and lack of a regional water management plan. The South Lee County Watershed Plan also indicated that more and more sheet flow was directed into the Imperial and Estero Rivers than historically, while smaller flows were directed south into the Cocohatchee River.

The South Lee County Watershed Plan, Cocohatchee Canal Phase 4 Improvements Report and the Southwest Florida Environmental Impact Statement all identified the wetland areas across the northern portion of the

project site as an important flow-way and outfall for parts of Lee and Collier Counties. However, developments to the west and the invasion of melaleuca trees have severely limited the conveyance capacity through this area, which has resulted in higher stages for longer durations during the rainy season. According to the applicant since the floods of 1995, the Cocohatchee west watershed has been further adversely impacted by the construction of a berm along the north side of the Cocohatchee Canal and by the construction of the Olde Cypress development. These two projects have reduced the Cocohatchee West watershed from a sheet flow area approximately two miles wide to a choke point of some 270 feet. If the flow-way were not constructed, the applicant estimated that under these current conditions a 25 year, three day storm would raise water levels one foot higher than in 1995.

The Cocohatchee Canal Phase 4 Improvements Report indicated additional flows could be directed into the Cocohatchee to alleviate some of the flooding along the Imperial River and recommended improving this flow-way. A permit for Phase IV of the Cocohatchee Canal Improvements was issued to the South Florida Water Management District by the Department of the Army (permit 199200377) on June 4, 2001. The permit authorized increasing the conveyance capacity of the Cocohatchee Canal by excavating approximately 37,000 cubic yards to widen approximately 2 ¾ miles of the easternmost five miles of the Cocohatchee Canal from the Naples Quarry to the end of the canal. The project also included the construction of a maintenance berm, various slope stabilization measures (rip-rap), and ditch culverts. The project is located in Sections 23 & 24, Township 48 South, Range 26 East, in Collier County, Florida.

Under the direction of the SFWMD, the applicant determined, through modeling, that a flow-way could be constructed to deliver additional but allowable flows to the improved Cocohatchee Canal, alleviate excessive flows from South Lee County during flooding, while at the same time not drain adjacent wetlands. The applicant's analysis showed that early in the rainy season the existing wetland areas could handle the flow between Corkscrew Swamp and the Cocohatchee. However, as the wet season progressed, the wetland vegetation would impede flows. This results in elevated water stages and adjacent flooding. By constructing a flow-way through this area with appropriate controls peak flows during high water conditions would be allowed to pass. As water levels receded at the end of the season weirs or control inverts would prevent any additional run-off.

The present flow-way design has gone through many iterations in order to satisfy the criteria established by the SFWMD. Earlier proposals included two arms to the flow-way and additional deep-water lakes. The applicant eliminated all but two of the deeper lakes and only one arm of the flow-way remains. Except for the two deeper lakes, depths are limited to 4 feet or top of the rock. The excavated portions of the flow-way are located to avoid impacting the higher

quality wetland areas to the maximum extent possible. The regional flow-way itself would be dedicated to the Big Cypress Basin Board of the SFWMD, for operation and maintenance along with operational funds.

The project has been designed to allow historic basin storage to take place within the development. During a flood event, basin flows can back flow into the Mirasol surface water management system providing flood storage. This system is a marked contrast to classic water management systems.

Alternative Site plans for development

The applicant has considered numerous site plan alternatives attempting to minimize wetland impacts, accommodate the hydrologic requirements of the Cocohatchee West regional flow-way and accomplish the overall project purpose.

SITE PLAN 1:

Land Use Description: Sections 10 and 15 were originally designed as a rural subdivision consisting of 5-acre lots, with the potential for a golf course similar to that developed at Twin Eagles. This is the existing land development in the area today. The lands within Section 22 are within the urban services area, which could be developed 4 units per acres. The original concept contemplated all lands within Section 22 being developed into residential units and a golf course.
Access: Access to the 5-acre lots would be via a grid road system similar to Golden Gate Estates. Access to the lands within Section 22 would be from Immokalee Road.
Utilities: Well and septic systems in Sections 10 and 15, with central water and sewer in Section 22.
Wetland Impacts: This proposed plan would have directly or secondarily impacted virtually every wetland on site. Further this plan would have caused negative upstream impacts by blocking flows and further increasing water levels upstream.
Flow-way Issues: No flow-way was proposed in this plan. Due to the fill requirements for roads, houses and auxiliary buildings the water flow would be blocked, exacerbating the existing flooding conditions on site and upstream. This alternative would have caused more adverse impacts that the "do nothing" alternative.
Consistency with Project Purpose: This land use pattern could theoretically meet the project purpose, but did not represent a development pattern that could be marketed successfully against other similar successful projects in the area. Moreover, it was not the most economical or environmentally sensitive site plan.

SITE PLAN 2:

Land Use Description: This site plan had an 18-hole golf course and 799 units in Sections 15 and 22. The applicant anticipated clustering the units in Section

15, in order to meet land use requirements. In addition, an 18-hole golf course, 35 estate lots, and 10 acres of commercial property were planned for Section 10. The golf course in Section 10 would have been a part of the lots, as was done on Twin Eagles. This site plan also had a double chain of lakes design for the flow-way. In addition to conveyance for regional flows, the flow-way would have acted as a buffer between the preserved wetlands and human activity within the developed portion of the property.

Access: Access for Sections 22 and 15 was from Immokalee Road. Access for Section 10 was from existing easements along Logan, then East-West Livingston Extension along the south line of Section 9, then north along the section line between Sections 9 and 10.

Utilities: Section 22 would have had central water and sewer service. The applicant anticipated permission to extend water and sewer service extension into Section 15. If such extension was not permitted, the applicant considered developing its own central water and sewer system to serve section 15. Section 10 would have been served by well and septic systems.

Wetland Impacts: This site would have directly impacted approximately 800 acres of on-site wetlands. The flow-way lakes would have added an additional 49 acres of impacts. Construction of the road to access Section 10 would have had additional wetland impacts.

Flow-way Issues: This site plan incorporated a chain of lakes design that impacted approximately 49 acres of wetlands.

Consistency with Project Purpose: This project met the applicant's project purpose. While the most economically viable site plan, environmental concerns required further reductions in impacts.

SITE PLAN 3:

Land Use Description: This site plan had a 27-hole golf course and 799 units in Sections 15 and 22. The applicant anticipated clustering the units in Section 15, in order to meet land use requirements. In addition, 20 lots, an 18-hole golf course, and 10 acres of commercial were planned for Section 10. The major changes were to reduce the number of lots in Section 10, and add an additional 9 holes of golf in Sections 22 and 15. This site plan also had a double chain of lakes design for the flow-way.

Access: Access for Sections 22 and 15 was from Immokalee Road. Access to Section 10 was from existing easements along Logan, then East-West Livingston extension along the south line of Section 9, then north along the section line between Sections 9 and 10.

Utilities: Section 22 would have had central water and sewer service. The applicant anticipated permission to extend water and sewer service into Section 15. If such extension was not permitted, the applicant considered developing its own central water and sewer system to serve Section 15. The clubhouse and maintenance facilities in Section 10 would have been served by well and septic systems

Wetland Impacts: This site plan would have directly impacted approximately 788 acres (53%) of on-site wetlands. Additional wetland impacts would have been required to construct the access road to Section 10.
Flow-way Issues: This site plan incorporated two 200-foot wide chains of lakes that impacted fewer wetlands than the previous designs.
Consistency with Project Purpose: This project met the applicant's project purpose. This site plan was less economically viable than site plan 2, due to the loss of some of the residential land uses in Section 10, but environmental concerns required further reductions in impacts.

SITE PLAN 4:

Land Use Description: After many meetings and discussions with local and State permitting authorities and environmental organizations, the project design was revised to consolidate all development in the southern portion of the site in Sections 15 and 22 and set aside the northern portion of the project as a large, contiguous flow-way preserve. This resulted in the development being confined to Sections 15 and 22, with 799 residential units and two 18-hole golf courses. With the elimination of development in Section 10, the flow-way was redesigned to a single branch, separating the flow-way preserve and the developed portion of the project.
Access: Access to the entire project was from Immokalee Road.
Utilities: Section 22 would have had central water and sewer service. The applicant anticipated permission to extend water and sewer service into Section 15. If such extension was not permitted, the applicant considered developing its own central water and sewer system to serve Section 15.
Wetland Impacts: This site plan would have had approximately 730 acres of direct wetland impacts. The shift out of Section 10 resulted in a larger contiguous flow-way preserve. Further, the elimination of the proposed road to Section 10 and the second arm of the flow-way eliminated wetland impacts in those areas.
Flow-way Issues: The excavated portions of the flow-way were located to avoid impacting high quality wetland areas to maximum extent possible. In addition the applicant eliminated one arm of the flow-way.
Consistency with Project Purpose: This project met the applicant's project purpose. This site plan was less economically viable than site plan 3, due to the loss of the residential and commercial land uses in Section 10 and nine holes of golf. Ongoing attempts to address environmental concerns resulted in further modifications to this site plan to reduce wetland impacts.

FINAL SITE PLAN:

Land Use Description: The final site plan for the Mirasol project proposes 799 residential units and two 18-hole golf courses, all located in portions of Sections 22 and 15. All of Section 10 and the most environmentally desirable portions of Section 15 will be preserved. With the exception of two deeper lakes, the flow-way is designed as a 200-foot wide shallow swale, which separates the flow-way

preserve and the developed portion of the project. The shallow swale will be limited to 4 feet or top of rock.
Access: Access is from Immokalee Road.
Utilities: Central water and sewer are approved and planned for the development in both Sections 15 and 22.
Wetland Impacts: The current site plan requires direct impacts to approximately 580 acres (~39%) of on-site wetlands, a reduction in proposed impacts of approximately 212 acres over the original submittal to the Corps. The wetland impact reduction between the final plan and site plan 4 results from refinements to the boundary of the flow-way (approximately 100 acres) and modifications to eliminate impacts within the development footprint itself (approximately 100 acres).
Flow-way Issues: The excavated portions of the flow-way were located to avoid impacting high quality wetland areas to maximum extent possible.
Consistency with Project Purpose: This project met the applicant's project purpose. Further reductions in wetland impacts cannot be made without compromising the economic viability of the project.

SUMMARY OF DEVELOPMENT ALTERNATIVES

The applicant indicates that years of annual inundation resulting from the constricted flows across the site led to a shift in the vegetative communities. Palmetto prairie and pine flatwood areas transitioned into communities exhibiting more wetland characteristics. While the applicant has not contested that the majority of the property exhibits these wetland characteristics, he states that the degree of wetland coverage currently seen on the site is a result of the unnatural inundation.

The applicant indicates that the intense coverage of the site by wetlands (~87% of total site acreage) makes development of a project of this magnitude infeasible without wetland impacts. However, the unavoidable impacts within the development footprint have been restricted to those considered necessary to the project: construction of residential units and access roads, and professional quality golf courses that incorporate natural features and maintain water quality standards. In order to achieve this reduction, all of the components of the development have been concentrated south of the proposed flow-way and have been designed to avoid the higher quality, less impacted wetlands within the development area.

The applicant indicated that a commitment was made to minimize the amount of fill to be placed within the on-site wetlands. Golf course fill will be localized to the play areas and existing natural ground elevation, and native vegetation will be maintained wherever possible. The house and lot construction will also utilize techniques to minimize fill requirements within the development areas. Wildlife corridors will be left within the development area and along the golf course play areas. These corridors will not be filled but will be restored with native vegetation

to provide internal wildlife use areas, water storage areas and buffers from the residential development.

The Corps has several comments regarding the applicant's development of alternatives starting with the unnatural inundation experienced at the project site. The Corps agrees that the hydro-patterns at the project site have been influenced by surrounding development and the applicant has also indicated that since 1995 the hydrology has been further adversely impacted by the construction of a berm along the north side of the Cocohatchee Canal and by the construction of the Olde Cypress development. However, the degree of this unnatural inundation is debatable. While the applicant indicates the site is overly wet, this opinion is not shared by EPA. Recently NWF and Audubon have joined the discussion by providing information indicating that the site is dryer today than in 1991. Review of soil surveys from the 1950's indicates that the majority of the site was then a mosaic of cypress domes, pine and cypress flatwoods, hydric pine flatwoods and palmetto islands. The location of these habitats is remarkably similar to today's conditions. Anecdotal information may indicate existing conditions are wetter but the applicant has provided no empirical data to substantiate the degree of inundation and much controversy remains regarding the applicant's assertions.

The Corps has reviewed the various site plans designed by the applicant. While the overall footprint of the development portion of the project may have been minimized, secondary impacts to adjacent wetlands have not. During a review of the various development plans presented by the applicant, the Corps requested that a residential section at the southwest corner of Section 15, adjacent to the Terafina wetland preserve, be moved further away from the preserve and replaced by golf holes 14, 15 and 16. These holes would act as buffers and tend to insulate the preserve from the residential section. The change requested by the Corps would not result in additional direct impacts. The applicant indicated that a change in site design would require a modification to the permit already issued by the SFWMD. Such a modification would open the project to challenges from non-governmental organizations. The applicant indicated that defending these challenges would be difficult and they did not want to modify the SFWMD permit; therefore, the applicant would not consider this revision or any other revision that would require a modification of the SFWMD permit.

And finally, the applicant's development of a site plan includes the simultaneous development of the flow-way. Although the applicant insists that the flow-way is not an integral part of the Mirasol development the applicant treats it as such during the on-site avoidance and minimization analysis. Only the first proposed site plan considered the option of no flow-way. This first plan would have directly or secondarily impacted virtually every wetland on site and would have blocked all flows across the site. This site plan is obviously unacceptable but is the only true alternative to the flow-way examined by the applicant. A few of the potential

alternatives that could satisfy the criteria required by the SFWMD are: allowing natural sheet flow across the site without additional development, removal of the berm along the north side of the Cocohatchee Canal, construction of a smaller flow-way, construction of other drainage systems at other locations such as along Broken Back Road, and the diversion of flows towards Cocohatchee East basin. None of these or other flow-way alternatives have been discussed or considered.

SUMMARY OF FLOW-WAY ALTERNATIVES

With the exception of Site Plan 1 above, the only alternatives to the flow-way consist of the simultaneous construction of the Mirasol residential and golf course development. Alternatives to the flow-way that do not involve the simultaneous construction of the Mirasol development have not been provided or discussed.

d. Project As Proposed (Outline impacts of project as proposed): A complete description of the project can be found in paragraph 2.c. above. Flow-way impacts include 89.11 acres of excavation (86.72 acres of wetlands and 2.39 acres of uplands) through the Mirasol, Terafina and Olde Cypress developments. The flow-way would be a minimum of 200 feet wide and approximately 4 feet deep except for two deep water lakes. The flow-way would allow an additional 400 cubic feet/second discharge into the Cocohatchee Canal during the 25 year, 3 day storm.

Hydrologic Modeling of Flow-way

During the review of this project, EPA, FWS and other organizations have expressed concerns regarding potential hydrologic impacts as a result of building the flow-way as proposed. Concerns revolved around the regional need of the flow-way, local benefits or impacts, impacts to adjacent wetlands and impacts to receiving waters.

The original concern expressed by the agencies and others pertained to the effects of the flow-way by potentially over-draining off-site wetlands including Corkscrew Swamp Sanctuary. The FWS estimated significant off-site wetland drawdowns as far away as 6.0 miles in their first Biological Opinion dated 21 February 2003. The FWS used a straight-line interpolation over this distance in their calculations. The applicant's modeling has indicated off-site effects as far as 1.0 or 1.5 miles from the flow-way depending upon water elevations. The modeling indicates no effects as far away as Corkscrew Swamp Sanctuary because wetlands provide a hydraulically, inefficient pathway upstream from the flow-way. The Corps of Engineers Regulatory Division requested that Engineering Division (EN-H) review the applicant's model and FWS calculations (MFR dated 7 September 2004). EN-H disagreed with the fundamental assumption by FWS that the straight-line interpolation between gauges was appropriate since the surrounding landscape's resistance to flow dominates the

spatial extent to which the channel will have an effect. The FWS subsequently revised their Biological Opinion on 9 March 2005.

Although EN-H seemed to generally support the applicant's analysis of off-site impacts, EN-H had other issues. EN-H stated that the applicant's model uses a complicated process that employed three different hydrologic/hydraulic models. A fourth model was also used in an attempt to predict project-induced changes in seasonal water surface depth in the near vicinity of the channel. The predicted changes in depth were then used to assess the wetland mitigation plan. EN-H noted several basic flaws in the model set-up and disagreed with some of the input parameters used to calibrate and drive the model. It was EN-H's opinion that these modeling deficiencies could lead to output errors large enough to invalidate the seasonal water surface depths used to assess the wetland mitigation. EN-H also stated that the flow-way would alter the timing and distribution of freshwater flows to the downstream estuary. This is contrary to current planning and design objectives of both SFWMD and the Corps. The SFWMD and Corps are currently expending considerable public funds in designing programs to capture excessive freshwater flows and then release this water during dry periods. EN-H recommended additional performance measures be used with respect to discharge volumes and seasonal timing. EN-H also stated that the project would accelerate the loss of freshwater from the regional system by directing it to tide. With less water in dynamic storage within the wetlands, aquifer recharge could be reduced and there is no analysis of the effects of this loss on public water supply.

As a result of these issues raised by EN-H, the applicant made design changes and responded to the many deficiencies noted. Afterwards, EPA requested that EN-H conduct an additional review. Actual data and input files for the model were provided to the Corps but are apparently insufficient to provide a more definitive review. By Memorandum dated 10 March 2005, EN-HH indicated that perhaps the Mirasol flow-way was no longer needed. Many of the recommendations from the South Lee County Watershed Plan (SLCWP) had been implemented and EN-H could not detect any regional benefits from the flow-way. The EPA conducted an internal analysis and agreed.

Despite the position of EPA and EN-H, the SFWMD still indicates that the flow-way is an integral and necessary part of the SFWMD's strategy to alleviate flooding in this geographic area (15 August 2005). SFWMD also stated that the flow-way would also reduce flood stages for adjacent developments and restore historic flows to the Cocohatchee Canal watershed. The flow-way would provide an additional 400 cubic feet per second (cfs) of conveyance for flood protection and, along with the other completed components of the South Lee County Watershed Plan, would provide approximately 50% of the overall plan's goal of 10,000 cfs additional flow. The cumulative effect of all these measures and

components (including the Mirasol flow-way) would alleviate flood flows in the Bonita Springs area.

During subsequent meetings between the applicant, EPA and the Corps additional examination of the applicant's modeling was conducted to more adequately determine the effects of the proposed flow-way. This additional examination again showed no regional differences as a result of the proposed flow-way and yielded potential adverse impacts to the adjacent wetland areas (MFR dated 4 November 2005). Furthermore, no additional technical documentation has been presented indicating that the flow-way is, in fact, needed to address regional flooding.

The SFWMD position is that in addition to regional benefits the flow-way reduces flood stages for adjacent developments; however, the extent of this reduction is not clear. The applicant indicates that the flood levels today are higher than 1995 because of a berm constructed by the SFWMD and the construction of Olde Cypress. The degree of current protection and the degree of protection without additional development in the watershed has not been provided. While the Corps agrees with the SFWMD that any solution that improves the level of service of flood protection without having an adverse impact on the environment is a step forward, the Corps does not agree that the proposed flow-way is without adverse impacts.

During the entire period that the applicant's modeling was being reviewed, the applicant, Corps and EPA evaluated the impacts of the flow-way on adjacent wetlands using existing and proposed hydrographs from the model. The applicant established optimum water levels for the various wetland habitats and then examined a series of grids (1,000 feet by 1,000 feet) across the project site. The modeling predicts reduced stages and hydro-periods as a result of the flow-way. The applicant feels that the reduced stages and hydro-periods represent more natural hydro-patterns and should be treated as mitigation lift. EPA disagrees. EPA does not concur with the applicant that the Mirasol site and surrounding area is severely impacted by significant off-site upstream inflow and finds that the proposed flow-way will over-drain most of the hydric pine flatwoods adjacent to the flow-way.

Further analysis was conducted using smaller grids, more accurate topographic information and by examining hydro patterns for separate habitats within each grid. Results were similar. EPA feels that the altered hydro-periods would reduce the production of forage fish and amphibians dependent on inundation of these wetlands. EPA has also expressed concerns regarding the deficiencies with the model. EPA is waiting for additional information from the applicant before taking a final position on mitigation and on the impacts from the flow-way but has encouraged the Corps to review the availability of other project designs to further reduce fill impacts.

As stated by SFWMD, the Cocohatchee West flow-way would allow an additional 400 cfs of freshwater discharge into the Cocohatchee Canal which eventually empties into the Wiggins Pass estuary ecosystem. These additional freshwater flows are of major concern. Water being flushed down the Caloosahatchee River from Lake Okeechobee has been blamed for infusing the river with too much fresh water and harming aquatic life in the estuaries. Although smaller in scale there are similar issues for the Cocohatchee ecosystem.

The applicant has provided hydrographs of observed and predicted flows across one of the weirs on the Cocohatchee. Although the Mirasol basin makes up 90.7% of the total basin area upstream from this weir, the applicant's analysis indicated only a minimal impact on the flow volume. Nevertheless, the basin area affected by the Cocohatchee West flow-way is considerable and has the potential to impact the Wiggins Pass estuary ecosystem. Additional review and monitoring should be necessary.

While the wetlands on the project site are degraded by exotic vegetation and may be stressed by inappropriate hydrology, the flow-way portion of the project involves other adjacent wetlands upstream from the project site as far as Corkscrew Swamp. Approximately 90 acres of wetlands, including 29 acres of wetland preserve within the Olde Cypress development, would be directly impacted by excavation. The hydrology of adjacent wetlands within Parklands, Terafina and Cypress Run would be altered. Additional conveyance of freshwater to tidal areas during peak storm events would exacerbate conditions within the Wiggins Pass estuary system. Together these wetland systems have been determined by the EPA to create an Aquatic Resource of National Importance.

The applicant's proposed mitigation is extremely uncertain and currently opposed by EPA. The Corps is relying on the applicant's modeling and hydro-pattern predictions in development of the project's mitigation plan, and since the Corps Engineering Division has stated that modeling deficiencies could lead to output errors large enough to invalidate the seasonal water surface depths used to assess the wetland mitigation, the entire mitigation plan is suspect. The applicant can still avoid on-site wetland impacts by not constructing the flow-way, which would reduce direct impacts by almost 90 acres and eliminate the potential secondary impacts to adjacent wetlands. The removal of the flow-way would also minimize impacts to the receiving waters and Wiggins Pass.

The Corps finds that the flow-way should not be an integral part of the applicant's proposal and needs an independent analysis. The flow-way has the potential to significantly impact the freshwater wetlands within the Cocohatchee West basin and also potentially impact the estuary waters of Wiggins Pass.

These waters collectively should be considered as aquatic resources of national importance.

e. Compensatory Mitigation (wetland enhancement, creation, etc.): The Corps finalized a compensatory mitigation plan for the proposal based on removing the flow-way from the project description. Although the applicant has consistently stated that the flow-way is not required as part of the Mirasol development, the applicant's attorney rejected the Corps request to remove the flow-way from the project proposal; therefore, the compensatory mitigation plan is not provided at this time.

9. Section 404(b)(1) Guidelines Evaluation (40 CFR Part 230):

a. Restrictions on discharges (230.10):

(1) Alternatives (See paragraph 8):

(a) The activity is located in a special aquatic site (wetlands, sanctuaries and refuges, mudflats, vegetated shallows, coral reefs, riffle & pool complexes): Yes _X_ No_____ The project site consists of 1486.02 acres of wetlands. Jurisdictional areas consist of melaleuca (*Melaleuca quinquenervia*), disturbed hydric pine, pine-cypress, and cypress communities.

(b) The activity needs to be located in a special aquatic site to fulfill its basic purpose. Yes ____ No __X__ The project is not water dependent.

(c) It has been demonstrated in paragraph 8 above that there are no practicable or less damaging alternatives, which would satisfy the project's basic purpose. Yes ____ No__X___ The applicant evaluated five (5) alternative sites based upon the applicant's overly narrow definition of project purpose, not upon the Corps' broader definition, and upon eight (8) selection criteria. Consequently, the project site identified as Mirasol met all eight criteria; however, the applicant failed to demonstrate that there are no practicable or less damaging alternatives to the flow-way construction.

(2) Other program requirements:

(a) The proposed activity violates applicable State water quality standards or Section 307 prohibitions or effluent standards. Yes ____ No __X__ The project has received an Environmental Resources Permit from the South Florida Water Management District, which constitutes compliance with state water quality standards (WQC).

(b) The proposed activity jeopardizes the continued existence of federally listed threatened or endangered species or affects their critical habitat. Yes ___ No __X__ The FWS issued a biological opinion and determined that the project would not jeopardize the continued existence of any federally listed threatened or endangered species and that the project would not affect any designated critical habitat (see paragraph 10.f. below).

(c) The proposed activity violates the requirements of a federally designated marine sanctuary. Yes ____ No __X__ The project is not located within and would not discharge into a federally designated marine sanctuary.

(3) The activity will cause or contribute to significant degradation of waters of the United States, including adverse effects on human health; life stages of aquatic organisms; ecosystem diversity, productivity and stability; and recreational, esthetic, and economic values. Yes__X__ No ____

Many of the watersheds and rivers in Southwest Florida have been listed by the Florida Department of Environmental Protection (FDEP) and EPA as impaired waters that are not meeting water quality standards [1998 303(d) list of impaired water bodies]. In addition, the "Environmental Impact Statement for Improving the Regulatory Process in Southwest Florida" (SWFEIS) studied water quality data from 1970 to the present. The SWFEIS predicted an overall continued decline in water quality values during the next twenty years. The SWFEIS identified watersheds and water bodies with secondary and cumulative water quality concerns and recommended a more rigorous evaluation of projects within these sensitive areas. The subject project site is located in an area with secondary and cumulative water quality concerns.

EPA believes that storm water discharges are a contributing factor that are causing or contributing to the degradation of receiving waters. Even when projects are constructed in accordance with existing state regulations, storm water discharges add additional pollutants to the receiving waters. Under the state regulations, conventional storm water management systems must be designed to detain or retain surface water runoff for particular design storm events. There is the presumption that if a project is constructed in accordance with state standards, the project is presumed to remove 80% of total suspended solids (TSS). State regulations further presume that the removal of 80% of TSS will prevent discharges from violating state water quality standards. However, according to a study repeatedly cited by EPA ("Pollutant Removal Efficiencies for Typical Stormwater Management Systems in Florida" by Harvey H. Harper, Ph.D., P.E., Environmental Research and Design Incorporated), conventional storm water management systems remove pollutants at different removal efficiencies. While many of the systems evaluated removed 80% of TSS, the

removal efficiencies for some of the soluble pollutants such as total nitrogen (TN) and total phosphorus (TP) were much lower. EPA believes that these additional releases of pollutants from approved treatment systems are contributing to the degradation of receiving waters and that, in accordance with Section 230.10(c) of the 404(b)(1) guidelines these projects should be denied Section 404 permits from the Corps of Engineers. Until such time as receiving waters are removed from the impaired waters list, EPA believes that existing conditions should be protected. That is, current pollutant loading rates should remain constant under pre-construction and post-construction conditions.

In order to address these concerns, the applicant submitted a water quality analysis of pre- and post-development nitrogen loading estimates using "Evaluation of Alternative Stormwater Regulations for Southwest Florida" prepared by Environmental Research & Design Incorporated (the Harper Methodology). This analysis was submitted and reviewed by the SFWMD and by letter dated 8 August 2003, SFWMD confirmed that the surface water management system for Mirasol is designed to reduce the post-development loadings of storm water nutrients to values that are equal or less than pre-development.

While this analysis has demonstrated that the project will not discharge additional nutrients, the construction of the flow-way could adversely impact adjacent wetlands within the Cocohatchee West basin and increase the quantity and timing of freshwater discharges into Wiggins Pass. These freshwater wetland systems are important foraging areas for the federally endangered wood stork as well as habitat for numerous species of mammals, birds, reptiles and amphibians. Freshwater discharges into coastal waters are being examined more closely as these releases could adversely impact our estuary and marine ecosystems. The Cocohatchee empties into the Gulf of Mexico through Wiggins Pass where catches of snook, red drum and sea trout are common. Commercial and sport fishing supports interstate commerce. Wiggins Pass and adjacent Delnor Wiggins Pass State Park are also popular areas to swim, snorkel, kayak or boat.

(4) Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem.
Yes _____ No__X___ Potential direct impacts could be avoided by not constructing the flow-way which would also minimize indirect impacts to the Wiggins Pass estuary ecosystem. The golf portions of the project can also be relocated to provide a buffer between the residential portions and preserve areas.

b. Findings: The proposed project does not comply with the Section 404(b)(1) guidelines because on-site wetlands can still be avoided and the impacts associated with the project can be minimized further. The applicant has

failed to rebut the presumption that, for a non-water dependent activity, a less damaging alternative exists. The Corps believes that issuing a permit for the project with the flow-way would result in significant degradation to the freshwater wetlands within the Cocohatchee West basin and to the high value Wiggins Pass marine ecosystem.

10. PUBLIC INTEREST REVIEW:

a. Corps of Engineers analysis of comments and responses: The Corps of Engineers has analyzed all the comments and emails received from commenting agencies, organizations and individuals. The U.S. Environmental Protection Agency has indicated that the project will affect Aquatic Resources of National Importance and has not removed its objections to the issuance of this permit.

b. All public interest factors have been reviewed. All comments received in response to the Public Notice have been considered in the following public interest review. The following public interest factors are considered relevant to this proposal.

(1) Conservation: The proposed on-site mitigation and preserve area would be enhanced, managed, placed under a permanent conservation easement, and eventually be transferred to the Corkscrew Regional Ecosystem Watershed trust. The preserve would create a contiguous conservation area with wildlife corridors and open greenways. The proposed project meets the applicant's objective and is consistent with the conservation of natural resources within the area. The removal of the flow-way from the project would increase the size of the preserve. Relocation of golf holes to the perimeter of the residential development would provide a better buffer between the preserve and development and would improve the utilization of the preserve by wildlife.

(2) Economics (33CFR320.4(q)): Since the applicant is a private enterprise, it is assumed that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the market place. In addition, the applicant is investing into the construction of the regional flow-way saving the tax payers from having to construct the flow-way. Construction of the flow-way may enhance property values in the area by providing flood relief; however, the flow-way has not been evaluated separately from the Mirasol development making an economic evaluation difficult. The residential and golf portions of the project can be expected to have a positive economic gain through increased employment during construction. In addition, the proposed project would serve to increase available housing and would incrementally add to the county tax base. The removal of the flow-way from the project plans would not affect the economic viability of project from the

applicant's perspective since the applicant has indicated the project would be cheaper to build without the flow-way.

(3) Aesthetics: The project site has been disturbed by fire and has been invaded by exotic vegetation. Completion of the proposed project would change the area into a more manicured suburban landscape, golf course and a wetland preserve free of exotic vegetation. The project should provide aesthetic improvements and should not cause disharmony from aerial or adjacent property view.

(4) General environmental concerns (33CFR320.4(p)): Most wetlands constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest. While the overall mitigation proposal includes the enhancement and preservation of a large and contiguous wetland system, the construction of the flow-way represents an avoidable impact that has the potential to over-drain adjacent wetlands. The flow-way would also reduce the water elevations during major storm events and would allow additional developments to be constructed within the Cocohatchee West basin. Instead of on-site flood water storage, additional freshwater discharges would be directed towards tidal waters. These collective impacts would cause or contribute to significant degradation of the Cocohatchee West basin and ecosystem. Completion of the project as proposed would be contrary to the public interest in terms of general environmental concerns.

(5) Wetlands (33CFR320.4(b)): Wetlands serve as valuable storage areas for storm and flood waters; are ground water discharge areas that maintain minimum base-flows important to aquatic resources; and serve significant water purification functions. The wetlands proposed to be impacted by the Mirasol development are mostly highly infested by exotic vegetation, which serves to reduce the importance of the wetlands. The wetlands on the north side of the project site would be enhanced and preserved as part of the proposed mitigation plan. The Corps believes that a mitigation plan can adequately replace the lost functions and values of the impacted wetlands from the development portion of the project. However, the construction the flow-way would also include the direct impact to high quality wetlands within the Olde Cypress development. The Olde Cypress wetland preserve was created to mitigate for wetland impacts during the construction of Olde Cypress and is under a conservation easement. Every effort should be made to protect wetland mitigation preserves and only when it is clearly in the public interest should a conservation easement be released or revised. There is also concern that the flow-way would over drain the wetlands within Olde Cypress and other adjacent wetlands. Alternatives to the Mirasol flow-way should be examined that provide flood relief without the potential to over drain these wetlands. The applicant has

failed to provide an analysis of these alternatives. Unnecessary wetland impacts would be contrary to the public interest.

(6) Historic and cultural resources (33CFR320.4(e)): A phase one archaeological assessment of the Mirasol parcel was conducted in August 2004. No cultural resources were identified within the project area during the investigation. The Florida Department of State, Division of Historical Resources (SHPO), received and reviewed the assessment and by letter dated 28 September 2004, stated that the proposed development will have no effect on cultural resources listed or eligible for listing on the National List of Historic Places, or otherwise of historical, architectural or archaeological value.

(7) Fish and wildlife values (33CFR320.4(c)): Wetlands serve significant natural biological functions, including food chain production, general habitat and nesting, spawning, rearing and resting sites for mammals, amphibians, reptiles, birds and fish, including several endangered or threatened species (discussed below in paragraph 9.f.). Many aquatic species require prolonged periods of inundation to achieve maximum productivity. The flow-way would directly impact approximately 90 acres of wetlands and alter the hydro-patterns of adjacent wetlands. Due to the unresolved issues concerning the potential effects to adjacent wetlands and the need for the flow-way, the Corps has determined that the completion of the project would be contrary to the public interest in terms of fish and wildlife values.

(8) Flood hazards: The project site is located within the Cocohatchee drainage basin and within a natural flow-way area called Cocohatchee West. The Cocohatchee West is one of the four natural flow ways providing a southern outlet to the South Lee Watershed. The other three historic pathways include the Cocohatchee East, the Corkscrew Canal and the Camp Keais Strand. The South Lee watershed encompasses an area of approximately 315 square miles extending north into Hendry County and as far east as Immokalee.

The historic water flow patterns, water depths, and hydro-periods within the Cocohatchee West flow-way have been significantly altered by agricultural and residential development, by the construction of Immokalee Road and the Cocohatchee Canal and by a lack of a regional watershed management plan. Surface water from South Lee County is funneled across the site from the east and eventually empties into the Cocohatchee or Immokalee Road Canal. A berm constructed along the Cocohatchee Canal across the site has backed up even more water for extended periods during the wet season. In its current situation, the Mirasol site and surrounding area is impacted by this significant off-site upstream inflow.

Region-wide flooding which occurred during the 1995 wet season led to a study commissioned by the SFWMD known as the South Lee County Watershed Plan (SLCWP). The plan was completed in 1999 and identified numerous methods to reduce flooding in Bonita Springs and South Lee County. Many of the recommended actions have been implemented. The SFWMD has identified the Mirasol flow-way as part of their regional plan to alleviate flooding in Bonita Springs. Review of the applicant's modeling for the Mirasol flow-way were reviewed by the Corps (EN-HH) and EPA. Both EN-HH and EPA find no regional benefit for constructing the flow-way and that the flow-way is not necessary.

SFWMD also states that the flow-way will reduce flood elevations within the Cocohatchee West basin. SFWMD states that four developments will benefit from the construction of the Mirasol flow-way including Olde Cypress, Quail West, Longshore Lakes and Heritage Bay. Olde Cypress and Heritage Bay would directly benefit. Rainfall data from 1995 applied to the local watershed under existing conditions would exceed the 25-year, three-day designed storm elevations for all of these projects. For example, the berm for Olde Cypress is permitted at 15.6 feet. Without the Mirasol flow-way flood stages are predicted to be 16.2 feet. With the flow-way flood stages in the vicinity of Olde Cypress would be 15.5 feet.

Based on the information provided, it appears that the construction of developments within the Cocohatchee West basin has increased flood stages and that the Mirasol flow-way is needed to compensate for these permitted developments. While flood protection is normally in the public's interest, the cost of this protection in terms of dollars, amount of additional flood protection provided, and environmental impacts, needs to be thoroughly evaluated. The flood protection proposed as part of the Mirasol project is contrary to the public's interest.

(9) Floodplain values (33CFR320.4(l)): The project site is located within the 500-year flood zone for Collier County, Florida, and should not result in any change to this zone. The project has been designed to allow historic basin storage to take place within the development. During a flood event, basin flows can back flow into the Mirasol surface water management system providing flood storage. This system is a marked contrast to classic water management systems

(10) Land use: The property is zoned appropriately for the intended use. The site plan provides for a lower density of units than is currently approved for the property. The applicant selected the site due in part to its proximity to major transportation arteries and activity centers, thus reducing urban sprawl. Also, the project is located within or adjacent to the urban service boundary and has access to water and sewer.

(11) Navigation (33CFR320.4(o)): Not applicable.

(12) Shore erosion and accretion: Not applicable.

(13) Recreation: The project will provide golf and other recreational opportunities within the project. The applicant is also proposing to transfer the approximately 900-acre flow-way preserve to public ownership via the Corkscrew Regional Ecosystem Watershed (CREW), however, the flow-way preserve is currently not proposed as an area with public access.

(14) Water supply (33CFR320.4(m)): The proposed development would include both a golf course and residential development component which would further tax the water supply of the county for irrigation and personal consumption. In the winter months, the area experiences drought conditions and water restrictions are implemented. In September 2000, the SFWMD placed Collier County on yearlong, lawn watering restrictions. Lee County is now also under mandatory water restrictions. From a water supply perspective, the continued taxing of scarce potable water supplies will have to be addressed in the near future.

(15) Water quality (also 33CFR320.4(d)): As mentioned in Part 9(a)(3) above, the applicant conducted a water quality analysis of pre- and post-development loading. SFWMD staff reviewed the submitted calculations confirming that the permitted surface water management system is designed to reduce the post-development loadings of storm water nutrients to values that are equal or less than the loadings generated under pre-development conditions.

(16) Energy Conservation and Development (33CFR320.4(n)): The proposed project would add to the energy requirements of the county. It is assumed that these increases would be well within the capability of county resources.

(17) Safety: The project should increase traffic on Immokalee Road, which is the major roadway leading to the site and would increase the need for emergency services such as police, fire, and health services. Traffic and emergency services are controlled by Collier County and it is assumed that these impacts on public safety were reviewed by Collier County prior to providing county approval for the project. Reducing flood stages in the Cocohatchee West basin is also a safety issue and the construction of the flow-way would be in the public's interest. The project is not expected to have any other impacts on safety for the general public.

(18) Food and fiber production: The proposed project will impact poor quality range land for cattle and have a negligible effect on food or fiber production.

(19) Mineral needs: There are no existing mineral or mining activities on the project site. As proposed, all of the golf course and infrastructure would be constructed from the fill provided from the flow-way and on-site lake excavation. Construction of the project without the flow-way would probably require the purchase of off-site fill, increasing the need for mining in the area.

(20) Considerations of property ownership: The applicant has owned the project site since the 1990's and wishes to develop the site. The site, however, was purchased well after passage of the Clean Water Act. It is reasonable to expect the applicant was aware of environmental issues and the potential for restrictions on development when the property was purchased.

c. Describe the relative extent of the public and private need for the proposed structure or work: The proposed project is located in one of the fastest growing areas in Florida. Public benefits will include short-term and long-term employment opportunities, increased housing, recreational opportunities, and an increase in the local tax base for Collier County. Private benefits include an economic return on the property/project for the applicant.

d. Describe the practicability of using reasonable alternative locations and methods to accomplish the objective of the purposed work where there are unresolved conflicts as to resource use: The practicability of using alternative methods is discussed under paragraph 7 above. The flow-way portion of the project should be evaluated separately so that all alternatives can be examined.

e. Describe the extent and permanence of the beneficial and/or detrimental effects which the proposed work is likely to have on the public and private uses to which the area is suited: The Mirasol development and Mirasol flow-way would have temporary detrimental effects during construction and these impacts can usually be minimized. Permanent impacts would result from the loss of wetlands and other wildlife habitats. Many of the wetlands within the Mirasol project site are invaded by exotic plant species, which serves to diminish both the wildlife function and the value of the wetland. The wetlands within the flow-way conveyance consist of low quality wetlands on the Mirasol and Terafina project sites and high quality wetlands within Olde Cypress. The flow-way would permanently impact approximately 90 acres of wetlands including approximately 29 acres of high quality wetlands within the Olde Cypress development and has the potential to over-drain adjacent wetlands.

f. Threatened or endangered species: The project site provides potential habitat to the Florida panther (*Puma concolor coryi*), the wood stork (*Mycteria americana*), the red-cockaded woodpecker (*Picoides borealis*), and the eastern indigo snake (*Drymarchon corais couperi*). The Corps consulted with the U.S. Fish and Wildlife (FWS) and the FWS concurred with the Corps that the project "may affect, but is not likely to adversely affect" the red-cockaded woodpecker and the eastern indigo snake. Formal consultation was conducted between the Corps and FWS regarding the Florida panther and wood stork.

FWS issued a Biological Opinion (BO) on 21 February 2003, and determined that the proposed project was not likely to jeopardize the continued existence of the panther or the wood stork. The BO included incidental take for the panther in the form of harm and harassment associated with the direct loss of 818.5 acres of habitat. The BO also included an incidental take for the wood stork in the form of the loss of as many as 292 nestlings per year.

The Corps reinitiated formal consultation with the FWS regarding the Florida panther on 15 September 2004, in an abundance of caution in light of a federal court ruling (*National Wildlife Federation v. Norton*, No. 03-1393 (JR) (D. D.C.August 20, 2004)). The FWS issued its revised BO on 9 March 2005. The FWS reached a similar conclusion in regard to the Florida panther; however, the incidental take for the wood stork was reduced from the loss of as many as 292 nestlings per year, to the loss of as many as 47 nestlings per year.

The FWS based the loss of nestlings on the impacts to mainly short, hydro-period wetlands. On-site fish density studies and other studies conducted at Corkscrew Swamp were used to calculate the loss of fish production and this loss was compared to fish consumption by wood storks. The FWS determined that the project could lead to harm of 23.5 wood stork nests. Assuming an average of two nestlings per nest, as many as 47 nestlings might be taken per-year.

As recently as 14 October 2005, Audubon of Florida and Collier County Audubon Society (Audubon) have presented information that indicates the importance of the Mirasol project site to foraging wood storks. Audubon has also indicated that FWS may have underestimated wetland impacts and should recalculate the take of wood stork nestlings. Although the Corps defers to the FWS regarding impacts to threatened and endangered species, impacts to the wood stork can be minimized by removing the flow-way from the project. Removing the flow-way would reduce the direct loss of wetlands and eliminate the potential to over drain adjacent wetlands.

g. Corps of Engineers Wetland Policy: The proposed wetland alteration associated with the construction of the Mirasol flow-way is not necessary to realize the project purpose. Flow-way construction would result in the direct loss

approximately 90 acres of wetlands. Although some of these wetlands are of poor quality, there are high quality wetlands within the Olde Cypress wetland preserve. Secondary impacts from the flow-way have the potential to over-drain adjacent wetlands and could impact the receiving waters. Since the Mirasol flow-way is not part of the project purpose these impacts can be avoided and secondary impacts minimized. Therefore, the construction of the regional flow-way is not consistent with the Corps of Engineers wetland policy.

h. Essential Fish Habitat: The Cocohatchee West flow-way would allow an additional 400 cfs of freshwater discharge into the Cocohatchee Canal, which eventually empties into the Wiggins Pass estuary ecosystem. The ability of an estuary to function properly and to sustain populations of animals and plants depends on the quantity, quality, timing, and location of freshwater inflows. Water being flushed down the Caloosahatchee River from Lake Okeechobee has been blamed for infusing the river with too much fresh water and harming aquatic life in the estuaries. Although smaller in scale there are similar issues for the Cocohatchee ecosystem.

These issues and concerns were recognized during the evaluation of Phase IV of the Cocohatchee Canal Improvements that was issued to the SFWMD by the Department of the Army (permit number 199200377) on 4 June 2001. Based on concerns regarding the overall impacts of freshwater releases to the estuary and seagrass beds, the Big Cypress Basin was required to conduct a seagrass and water quality-monitoring program at the mouth of the Cocohatchee River as a permit condition. The final report for the program was submitted to the Corps of Engineers on December 19, 2003. Seagrass densities declined over the three-year study but any correlation between water quality, freshwater flows and seagrass densities was inconclusive. Additional studies were recommended.

In February 2005, the Corps of Engineers notified the Big Cypress Basin that seagrass monitoring at Wiggins Pass should be continued until 2011. If any correlation were found between water quality, freshwater flows and seagrass densities the operation of the three weirs on the Cocohatchee Canal could then be examined and possibly adjusted. Seagrass monitoring resumed in the spring of 2005 but was immediately terminated after discovering the disappearance of the seagrass bed being monitored. Hurricane Charlie in 2004 or possibly some other condition may have been responsible for this loss.

The applicant has provided hydrographs of observed and predicted flows across one of the weirs on the Cocohatchee. Although the Mirasol basin makes up 90.7% of the total basin area upstream from this weir, the applicant's analysis indicated only a minimal impact on the flow volume. Nevertheless, the basin area affected by the Cocohatchee West flow-way is considerable and has the potential to impact the Wiggins Pass estuarine ecosystem. Salinity changes as a result of freshwater releases can have an adverse effect on commercial fish

and shellfish as well as other estuarine species. Additional studies need to be conducted to assess the freshwater inflow requirements of the Wiggins Pass estuarine ecosystem, in order to sustain a healthy ecosystem and productivity of fish, shellfish, and other estuarine life.

i. Cumulative and Secondary Impacts: The project is located within the study area of the Southwest Florida Environmental Impact Statement (EIS). The study area is approximately 1,556 square miles bounded in the northwest by the cities of Ft Myers/Sanibel, the northeast by Lehigh Acres/Immokalee, the southwest by Naples and the southeast by Everglades City. Several years ago, the Corps of Engineers Regulatory Division became increasingly concerned whether the incremental (permit-by-permit) reviews were adequately addressing cumulative and secondary impacts. Recurring issues in those reviews have been loss of spatial habitat (particularly for endangered species), effects of changes in water quality and flows/timing on downstream water bodies, and appropriate amount and location of wetland mitigation. These concerns were heightened in the rapidly growing Lee and Collier Counties. The Corps of Engineers then hosted an Alternative Development Group (ADG) composed of community and agency representatives. The membership was balanced to represent the range of views of the community and to provide a mix of expertise for the development of alternatives. Through 10 professionally facilitated meetings, the ADG defined 12 evaluation issues, agreed to 62 measurement factors, and then created and evaluated 28 alternatives. The work of the ADG was used to prepare the Draft SWEIS that was released in July 1999. The Final Draft EIS was released in August 2000.

The Final Draft EIS document essentially has four parts. First, it describes the existing conditions such as wildlife habitat and water quality trends. Second, it presents five maps depicting what the landscape may or may not look like in 20+/- years. Third, the document compares the environmental and other effects between the maps for factors such as area of wetland fill, effect on various species of wildlife, and change in water quality. Fourth, it provides Permit Review Criteria that lists special issues correlated to geographic location.

In August of 2003, the Record of Decision (ROD) for the EIS was issued. The ROD describes four tasks that will be performed by Corps project managers during their reviews of applications. These tasks are: (1) screen the incoming applications project locations against a set of maps to identify potential issues; (2) use site specific information provided as part of the application process to determine whether the issue is relevant to the project at hand; (3) if relevant, use the information accompanying the maps as well as information provided by the applicant or others to assess the effect, if any; and, (4) compare the project location to the predicted futures presented by the EIS. The tasks are designed to use the information in the EIS as a supplement to the normal permit-by-permit review process. The purposes of these supplemental tasks are to increase

assurance that important natural resource issues are identified early in the review process and to provide information on the possible project effects on an issue in the context of potential future cumulative effects. The maps do not represent permittable or non-permittable areas.

Potential Issues/Assessment of Affects

The project was compared to the Permit Review Criteria that lists the following potential special issues correlated to geographic location:

Public Acquisition – Lands identified for acquisition are maintained on several different lists and under various programs and purposes. The goal of the Southwest Florida Regional Planning Council's Strategic Land Conservation Strategy is to coordinate these lists. No comments have been received from the Southwest Florida Regional Planning Council; however, upon successful restoration of the flow-way preserve, the preserve would be transferred into public ownership via the Corkscrew Regional Watershed Ecosystem trust.

Flow-ways – The project area has been identified as a flow-way where wetland sloughs generally drain to canals or streams and eventually reach the coast. The EIS recommends that these areas are maintained with sufficient width to allow wet season flows. The Mirasol flow-way appears to be in accordance with these recommendations; however, other alternatives need to be reviewed that have fewer secondary impacts.

Habitat Fragmentation – The applicant proposes to preserve 745.47 acres of wetlands and 105.95 acres of uplands that would be preserved as a contiguous unit that would serve to connect CREW lands to the east with other preserved lands to the west. The project has minimized cumulative and indirect effects in accordance with the recommendation in the EIS.

Marshes – Marshes have been identified as important areas for the production and concentration of forage fish for wading birds. Marshes with a mix of hydro-patterns are needed so forage fish are available throughout the year. The project includes the construction of 22-foot littoral shelves along the flow-way and two (2) eight-foot (8') deep areas within the flow-way to concentrate forage fish; however, even with these features, the FWS issued an incidental take statement that authorizes the loss of up to 47 nestlings per year. The Mirasol flow-way would alter the hydro-patterns of adjacent wetlands and have the potential to impact short hydro-period wetlands. Other methods to create marsh habitat for wood storks and other wading birds should be developed to minimize impacts to the wood stork and other wading birds.

Florida panther – The project has been thoroughly reviewed by the FWS and the Service issued two Biological Opinions (BO) for the Florida panther. The most recent BO was dated 9 March 2005 and stated that the most current and up-to-

date scientific and commercial information was used in their analysis and decisions. It was the Service's opinion that the project would not jeopardize the continued existence of the panther. It was also the Service's opinion that there will be no direct take of the Florida panther resulting from this project and that the loss of habitat from implementing this project, will be offset by the conservation of other, superior habitat.

Red-Cockaded Woodpecker (RCW) – The project was coordinated with the FWS, which determined that the proposed project may affect, but is not likely to adversely affect the RCW.

Strategic Habitat Conservation Area (SCHA) Lands – The applicant proposes to preserve 745.47 acres of wetlands and 105.95 acres of uplands that would be preserved. This preserve would connect to preserves to the west (Terafina) and south (Olde Cypress) and also connect to undeveloped lands to the east. Much of this undeveloped land to the east in owned by the CREW Land Trust. These lands are also contiguous to Corkscrew Swamp and Flint Pen Strand. As part of the compensatory mitigation proposal, additional lands contiguous to the Mirasol preserve or CREW Land Trust will be purchased to further enlarge the wetland preserves.

High Wetland Proportion – The Mirasol project and flow-way is located in an area with a high proportion of wetlands. The construction of the flow-way would directly impact an additional 90 acres of wetlands. This additional 90 acres of impact is not needed to fulfill the project's purpose which is to construct a residential and golf course community. Alternatives other than impacting these 90 acres have not been reviewed.

Water Quality – As mentioned in Part 9(a)(3) above, the applicant conducted a water quality analysis of pre-and post-development nitrogen loading estimates. This analysis was submitted and reviewed by the SFWMD and by letter dated 8 August 2003, SFWMD confirmed that the surface water management system for Mirasol is designed to reduce the post-development loadings of storm water nutrients to values that are equal or less than pre-development. An overall analysis of water quality impacts in terms of freshwater releases to the Cocohatchee Canal and Wiggins Pass has not been conducted.

Predicted Futures

The EIS presents five alternatives for the future, each including a map that delineates areas of "development," "agriculture," and "preserves" based on various ideas presented to the Corps of Engineers how the land in the study area may be or should be distributed at the end of 20+ years. These maps are used to prepare estimates of acres of wetland fill, area of habitat lost, change in water quality, etc. The EIS recognizes that these maps represent the potential result of

many individual decisions by the Corps of Engineers, landowners, Counties, and others.

In reference to predicted futures presented in the EIS, the project site is identified as preserve and development within Ensembles Q and R, and preserve within Ensembles S, T, and U. Therefore, the project is consistent with the various options available under the EIS and within the range of cumulative impacts and secondary impacts.

While the range of cumulative and secondary impacts for the development portion is consistent with the various options reviewed under the EIS, the construction of the regional flow-way conveyance presents separate problems on a watershed basis. The construction of the flow-way will result in additional impacts to wetlands and loss of wildlife habitat that may not be necessary. The flow-way needs the same level of review as other projects to ensure the avoidance and minimization of impacts and the adequate compensation for those unavoidable impacts. This has not occurred.

11. Public Hearing Evaluation: The Corps has reviewed all comments submitted regarding the subject project and has included all of these comments into the official project file. The Corps has followed all permitting and environmental regulations including the CWA, ESA and NEPA. The Corps has reinitiated formal consultation with the FWS regarding the Florida panther and the Service has evaluated the cumulative effects of the subject project on Southwest Florida panther habitat and on the existence and recovery of the panther. Conducting a public hearing would not provide any additional information that has not already been presented; therefore, no public hearing should be conducted.

12. Determinations:

a. Finding of No Significant Impact (FONSI): Having reviewed the information provided by the applicant and all interested parties and an assessment of the environmental impacts, I find that this permit action will not have a significant impact on the quality of the human environment. Therefore, an Environmental Impact Statement will not be required.

b. Compliance with 404(b)(1) guidelines Having completed the evaluation in paragraph 9 above, I have determined that the proposed discharge does not comply with the 404(b)(1) guidelines. There are less damaging on site methods to minimize impacts and it is presumed that there are alternative project sites available. As proposed, the project would cause or contribute to significant degradation of Aquatic Resources of National Importance.